Blood Lab Testing System

Simple • Effective • Scientific

Comprehensive Lab Panel
Blood Lab Interpretation Guide

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Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Glucose, Serum	Clinical High	100 or higher								
	Functional High	95 - 99								
	Optimal	80 - 94								
	Functional Low	65 - 79								
	Clinical Low	0 - 64								

Lab Test Explanation for Glucose, Serum at Clinical High:
Glucose, Serum

Your result for this lab test is in the CLINICAL HIGH range. Serum Glucose is a measurement to see how well your body is controlling your blood sugar levels over a shorter period of time - about the past 12 - 24 hours. Glucose is the preferred source of fuel for all the cells in your body. It is also the most important source of fuel for your brain and nervous system which has the greatest need for healthy Glucose levels because it alone consumes about 50% of the glucose in your body. Your Glucose can vary quite a bit . . . even within the same day based on what you are eating and drinking. The most reliable method for testing Serum Glucose is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Glucose is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about blood sugar control.

When Glucose is in the Clinical High range this means your body has lost its ability to effectively control your blood sugar levels. This is very concerning because excess sugar in the blood can become toxic to the body over time. Higher than optimal blood sugar levels, or eating and drinking excessive amounts of sugar during the day, can contribute to cardiovascular problems, hormone problems, fatigue, weight gain and much more. In the more extreme case of a diabetic who has poorly controlled their blood sugar levels over time, the end stage of this chronically high blood sugar could result in tissue damage leading to kidney failure, vision loss, neuropathy, and even the amputation of toes or feet. For everyone this excess sugar will also make your body chemistry very acidic, and weaken your immune system creating a more ideal environment for illness, disease, cancer and invading organisms like yeast (candida) to get a foothold and make you sick.

Special Instructions at Clinical High:

Lab Test Explanation for Glucose, Serum at Functional High:
Glucose, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Serum Glucose is a measurement to see how well your body is controlling your blood sugar levels over a shorter period of time - about the past 12 - 24 hours. Glucose is the preferred source of fuel for all the cells in your body. It is also the most important source of fuel for your brain and nervous system which has the greatest need for healthy Glucose levels because it alone consumes about 50% of the glucose in your body. Your Glucose can vary quite a bit . . . even within the same day based on what you are eating and drinking. The most reliable method for testing Serum Glucose is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Glucose is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about blood sugar control.

Special Instructions at Functional High:

When Glucose is in the Functional High range this means your body is beginning to lose its ability to effectively control your blood sugar levels. This is very concerning because excess sugar in the blood can become toxic to the body over time. Higher than optimal blood sugar levels, or eating and drinking excessive amounts of sugar during the day, can contribute to cardiovascular problems, hormone problems, fatigue, weight gain and much more. In the more extreme case of a diabetic who has poorly controlled their blood sugar levels over time, the end stage of this chronically high blood sugar could result in tissue damage leading to kidney failure, vision loss, neuropathy, and even the amputation of toes or feet. For everyone this excess sugar will also make your body chemistry very acidic, and weaken your immune system creating a more ideal environment for illness, disease, cancer and invading organisms like yeast (candida) to get a foothold and make you sick.	
Lab Test Explanation for Glucose, Serum at Optimal: Glucose, Serum Your result for this lab test is in the OPTIMAL range. Serum Glucose is a measurement to see how well your body is controlling your blood sugar levels over a shorter period of time - about the past 12 - 24 hours. Glucose is the preferred source of fuel for all the cells in your body. It is also the most important source of fuel for your brain and nervous system which has the greatest need for healthy Glucose levels because it alone consumes about 50% of the glucose in your body. Your Glucose can vary quite a bit . . . even within the same day based on what you are eating and drinking. The most reliable method for testing Serum Glucose is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw.	Special Instructions at Optimal:
Lab Test Explanation for Glucose, Serum at Functional Low: Glucose, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Serum Glucose is a measurement to see how well your body is controlling your blood sugar levels over a shorter period of time - about the past 12 - 24 hours. Glucose is the preferred source of fuel for all the cells in your body. It is also the most important source of fuel for your brain and nervous system which has the greatest need for healthy Glucose levels because it alone consumes about 50% of the glucose in your body. Your Glucose can vary quite a bit . . . even within the same day based on what you are eating and drinking. The most reliable method for testing Serum Glucose is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. When Glucose is in the Functional Low range it means your blood sugars are falling too low at times for the best function of your body. This is sometimes referred to as “Hypoglycemia” . . . which means low blood sugar. Glucose levels measuring in the 70’s and upper 60’s with lab testing can correlate with a condition called Functional Hypoglycemia or Reactive Hypoglycemia. People with this type of Hypoglycemia usually don’t feel good if they go too long between meals, and can experience symptoms of fatigue, weakness, headaches and even shakiness until they eat food to feel better again. Hypoglycemia can also contribute to feelings of anxiety or panic attacks. People with Reactive Hypoglycemia often have “insulin resistance” . . . meaning the cells in your body have become resistant to the effect of insulin. Insulin is a hormone produced by your pancreas which helps to transport sugar from the blood and bring it into your cells to be used as energy. If your cells become resistant to the effect of insulin, then blood sugar levels will usually go much higher before the body	Special Instructions at Functional Low:

will correct this and bring these glucose levels back down. This can often result in your blood sugar levels dropping down too fast causing low blood sugar or hypoglycemia. These ups and downs of blood sugar, and the tendency for insulin resistance and hypoglycemia, can be the beginning of what turns into diabetes later in life.	
Lab Test Explanation for Glucose, Serum at Clinical Low: Glucose, Serum Your result for this lab test is in the CLINICAL LOW range. Serum Glucose is a measurement to see how well your body is controlling your blood sugar levels over a shorter period of time - about the past 12 - 24 hours. Glucose is the preferred source of fuel for all the cells in your body. It is also the most important source of fuel for your brain and nervous system which has the greatest need for healthy Glucose levels because it alone consumes about 50% of the glucose in your body. Your Glucose can vary quite a bit . . . even within the same day based on what you are eating and drinking. The most reliable method for testing Serum Glucose is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. A Serum Glucose in the Clinical Low range is rare to see on a routine 12 hour fasting blood test. This is called a Clinical Hypoglycemia, and the result is that blood sugars levels drop so low it could strongly affect how your body is functioning and potentially become a life threatening situation. When Glucose measures in the Clinical Low range you will likely need additional testing or to see a specialist to help determine the cause.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Hemoglobin A1c	Clinical High	6.0 or higher								
	Functional High	5.7 – 5.9								
	Optimal	5.2 – 5.6								
	Functional Low	4.8 – 5.1								
	Clinical Low	0.0 – 4.7								

Lab Test Explanation for Hemoglobin A1c at Clinical High: Hemoglobin A1c Your result for this lab test is in the CLINICAL HIGH range. Hemoglobin A1c is a measurement to see how well your body is controlling your blood sugar levels (or glucose) over a longer period of time - about the past 2 to 3 months. As glucose circulates in the blood, some of it binds to hemoglobin. Hemoglobin is part of your red blood cells and it is responsible for transporting oxygen throughout your body. Once glucose binds to hemoglobin it will remain there for the life of the red	Special Instructions at Clinical High:

blood cell - which is about 120 days. This makes it a good measurement of what's been happening with your blood sugar levels over a longer period of time . . . in this case the past 2 to 3 months. When Hemoglobin A1c is in the Clinical High range it means that you've had high blood sugar levels for a longer period of time. There are many health consequences to having high blood sugar levels to include: cardiovascular problems, hormone problems, fatigue, weight gain, diabetes and much more. It will be important to work towards lowering your high blood sugar levels, and this could result in a much better quality of life as you get older. It's also important to note that you may have a near normal Serum Glucose, but the Hemoglobin A1c can still be in the Clinical High range telling us that over the long-term your blood sugar levels have been too high even though the short-term measurement of blood sugars (Serum Glucose) is near normal.	
Lab Test Explanation for Hemoglobin A1c at Functional High: Hemoglobin A1c Your result for this lab test is in the FUNCTIONAL HIGH range. Hemoglobin A1c is a measurement to see how well your body is controlling your blood sugar levels (or glucose) over a longer period of time - about the past 2 to 3 months. As glucose circulates in the blood, some of it binds to hemoglobin. Hemoglobin is part of your red blood cells and it is responsible for transporting oxygen throughout your body. Once glucose binds to hemoglobin it will remain there for the life of the red blood cell - which is about 120 days. This makes it a good measurement of what's been happening with your blood sugar levels over a longer period of time . . . in this case the past 2 to 3 months. When Hemoglobin A1c is in the Functional High range it means that you've had higher than optimal blood sugar levels for a longer period of time. There are many health consequences to having high blood sugar levels to include: cardiovascular problems, hormone problems, fatigue, weight gain, diabetes and much more. It will be important to work towards lowering your high blood sugar levels, and this could result in a much better quality of life as you get older. It's also important to note that you may have a near normal Serum Glucose, but the Hemoglobin A1c can still be in the Functional High range telling us that over the long-term your blood sugar levels have been too high even though the short-term measurement of blood sugars (Serum Glucose) is near normal.	Special Instructions at Functional High:
Lab Test Explanation for Hemoglobin A1c at Optimal: Hemoglobin A1c Your result for this lab test is in the OPTIMAL range. Hemoglobin A1c is a measurement to see how well your body is controlling your blood sugar levels (or glucose) over a longer period of time - about the past 2 to 3 months. As glucose circulates in the blood, some of it binds to hemoglobin. Hemoglobin is part of your red blood cells and it is responsible for transporting oxygen throughout your body. Once glucose binds to hemoglobin it will remain there for the life of the red blood cell - which is about 120 days. This makes it a good measurement of what's been happening with your blood sugar levels over a longer period of time . . . in this case the past 2 to 3 months.	Special Instructions at Optimal:

Lab Test Explanation for Hemoglobin A1c at Functional Low: Hemoglobin A1c Your result for this lab test is in the FUNCTIONAL LOW range. Hemoglobin A1c is a measurement to see how well your body is controlling your blood sugar levels (or glucose) over a longer period of time - about the past 2 to 3 months. As glucose circulates in the blood, some of it binds to hemoglobin. Hemoglobin is part of your red blood cells and it is responsible for transporting oxygen throughout your body. Once glucose binds to hemoglobin it will remain there for the life of the red blood cell - which is about 120 days. This makes it a good measurement of what's been happening with your blood sugar levels over a longer period of time . . . in this case the past 2 to 3 months. We are less concerned about a Hemoglobin A1c in the Functional Low range if Serum Glucose is testing in the Optimal range. When Hemoglobin A1c is in the Functional Low range - and in conjunction with a lower than optimal Serum Glucose - we become much more concerned about hypoglycemia (low blood sugar). Symptoms of hypoglycemia can include fatigue, weakness, headaches and even shakiness of the hands or body until food is eaten to feel better again. Low blood sugar can also contribute to feelings of anxiety or panic attacks. People with lower than optimal blood sugars and hypoglycemia often have "insulin resistance" . . . meaning the cells in your body have become resistant to the effect of insulin. Insulin is a hormone produced by your pancreas which helps to transport sugar from the blood and bring it into your cells to be used as energy. If your cells become resistant to the effect of insulin, then blood sugar levels will usually go higher before the body will correct this and bring these glucose levels back down . . . but the result can be bringing your levels down too fast resulting in low blood sugar or hypoglycemia. These ups and down of blood sugar, and the tendency for insulin resistance and hypoglycemia, can be the beginning of what turns into diabetes later in life.	Special Instructions at Functional Low:
Lab Test Explanation for Hemoglobin A1c at Clinical Low: Hemoglobin A1c Your result for this lab test is in the CLINICAL LOW range. Hemoglobin A1c is a measurement to see how well your body is controlling your blood sugar levels (or glucose) over a longer period of time - about the past 2 to 3 months. As glucose circulates in the blood, some of it binds to hemoglobin. Hemoglobin is part of your red blood cells and it is responsible for transporting oxygen throughout your body. Once glucose binds to hemoglobin it will remain there for the life of the red blood cell - which is about 120 days. This makes it a good measurement of what's been happening with your blood sugar levels over a longer period of time . . . in this case the past 2 to 3 months. Having a Hemoglobin A1c in the Clinical Low range is rare to see on a routine 12 hour fasting blood test. This would mean that blood sugars have been clinically low for a longer period of time resulting in a condition called Clinical Hypoglycemia. This would likely have been identified at an earlier stage since these clinically low blood sugar levels could strongly affect how your body is functioning and potentially become a life threatening situation. When Hemoglobin A1c measures in the Clinical Low range you will likely need additional testing or to see a specialist to help determine the cause.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Uric Acid, Serum	Clinical High	8.7 or higher								
	Functional High	5.8 - 8.6								
	Optimal	3.7 - 5.7								
	Functional Low	NA								
	Clinical Low	0.0 - 3.6								

Lab Test Explanation for Uric Acid, Serum at Clinical High:
Uric Acid, Serum

Your result for this lab test is in the CLINICAL HIGH range. Uric Acid is created in the body as a by-product of protein metabolism, or increased destruction of cells within your body. Uric Acid is removed from the body mostly by your kidneys, and this makes Uric Acid an indicator of how your kidneys are functioning. High Uric Acid can also be a strong indicator of possible inflammation within your body.

When the Uric Acid is in the Clinical High range it will often be associated with a condition called Gout. Uric Acid can buildup and form small crystals in the joints and tissues of the body and cause inflammation and pain. A classic presentation of Gout usually affects only one or a few joints in the body, and will often settle in the big toe of the foot causing inflammation and severe pain. Some common reasons for increased Uric Acid are: 1) blood sugar issues and consuming too much sugar and highly processed carbohydrates, 2) over-consumption of meats, organ meats, shellfish and legumes, 3) over-consumption of alcohol, 4) over-consumption of fried, fatty, processed and hydrogenated foods and 5) certain drugs or medications can result in high Uric Acid. A final consideration is when Uric Acid levels are high along with other abnormal kidney function lab tests . . . you may then want to consult with a specialist to rule out kidney disease. Dietary changes can be an important part of reducing high Uric Acid levels for some people.

Special Instructions at Clinical High:

Lab Test Explanation for Uric Acid, Serum at Functional High:
Uric Acid, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Uric Acid is created in the body as a by-product of protein metabolism, or increased destruction of cells within your body. Uric Acid is removed from the body mostly by your kidneys, and this makes Uric Acid an indicator of how your kidneys are functioning. High Uric Acid can also be a strong indicator of possible inflammation within your body.

When the Uric Acid is in the Functional High range it will often be associated with a condition called Psuedo-Gout. A clinical diagnosis of Gout is a condition where Uric Acid levels are in the Clinical High range, and the Uric Acid can buildup and form small crystals in the joints and tissues of the body and cause inflammation and severe pain. A classic presentation of Gout usually affects only one or a few joints in the body, and will often settle in the big toe of the foot causing inflammation and severe pain. What many people don't know is that you can have only moderately high Uric Acid

Special Instructions at Functional High:

levels in blood testing – meaning they are in the Functional High range – and have a condition called pseudo-gout. Pseudo-gout can result in pain, inflammation, stiffness and achiness of muscles and joints that are more generalized throughout the body . . . sometimes being confused with arthritis or other inflammatory conditions. Some common reasons for increased Uric Acid are: 1) blood sugar issues and consuming too much sugar and highly processed carbohydrates, 2) overconsumption of meats, organ meats, shellfish and legumes, 3) overconsumption of alcohol, 4) overconsumption of fried, fatty, processed and hydrogenated foods and 5) certain drugs or medications can result in high Uric Acid. A final consideration is when Uric Acid levels are high along with other abnormal kidney function lab tests . . . you may then want to consult with a specialist to rule out kidney disease. Dietary changes can be an important part of reducing high Uric Acid levels for some people.	
Lab Test Explanation for Uric Acid, Serum at Optimal: Uric Acid, Serum Your result for this lab test is in the OPTIMAL range. Uric Acid is created in the body as a by-product of protein metabolism, or increased destruction of cells within your body. Uric Acid is removed from the body mostly by your kidneys, and this makes Uric Acid an indicator of how your kidneys are functioning. High Uric Acid can also be a strong indicator of possible inflammation within your body.	Special Instructions at Optimal:
Lab Test Explanation for Uric Acid, Serum at Functional Low: NA	Special Instructions at Functional Low:
Lab Test Explanation for Uric Acid, Serum at Clinical Low: Uric Acid, Serum Your result for this lab test is in the CLINICAL LOW range. Uric Acid is created in the body as a by-product of protein metabolism, or increased destruction of cells within your body. Uric Acid is removed from the body mostly by your kidneys, and this makes Uric Acid an indicator of how your kidneys are functioning. High Uric Acid can also be a strong indicator of possible inflammation within your body. While most health care providers are concerned with Uric Acid levels go too high . . . we are also concerned when Uric Acid levels are in the Clinical Low range as this is an indicator of a possible B Vitamin deficiency – specifically a deficiency of B12 and Folic Acid, or a possible deficiency of the trace mineral Molybdenum.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
BUN	Clinical High	25 or higher								
	Functional High	21 - 24								
	Optimal	10 - 20								
	Functional Low	6 - 9								
	Clinical Low	0 - 5								

Lab Test Explanation for BUN at Clinical High:
BUN

Your result for this lab test is in the CLINICAL HIGH range. BUN (or Blood Urea Nitrogen) is one of the tests to measure kidney function. As proteins are broken down in your digestive system from your diet, your liver will process and utilize these proteins and produce a waste product called Urea. This waste product (Urea) is then removed from your blood by the kidneys. If BUN is in the Clinical High range this can indicate that the kidneys may be impaired in their function, but this should first be correlated with other kidney function test such as GFR and Creatinine. High BUN combined with a high Creatinine and low GFR (Glomerular Filtration Rate) will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease. The BUN can also be elevated due to dehydration, excessive protein intake, or the effect of certain medications.

Special Instructions at Clinical High:

Lab Test Explanation for BUN at Functional High:
BUN

Your result for this lab test is in the FUNCTIONAL HIGH range. BUN (or Blood Urea Nitrogen) is one of the tests to measure kidney function. As proteins are broken down in your digestive system from your diet, your liver will process and utilize these proteins and produce a waste product called Urea. This waste product (Urea) is then removed from your blood by the kidneys. If BUN is in the Functional High range this can indicate that the kidneys may be impaired in their function, but this should first be correlated with other kidney function test such as GFR and Creatinine. High BUN combined with a high Creatinine and low GFR (Glomerular Filtration Rate) will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease. The BUN can also be elevated due to dehydration, excessive protein intake, or the effect of certain medications.

Special Instructions at Functional High:

Lab Test Explanation for BUN at Optimal:
BUN

Your result for this lab test is in the OPTIMAL range. BUN (or Blood Urea Nitrogen) is one of the tests to measure kidney function. As proteins are broken down in your digestive system from your diet, your liver will process and utilize these proteins and produce a waste product called Urea. This waste product (Urea) is then removed from your blood by the

Special Instructions at Optimal:

kidneys. BUN is a lab test that should first be correlated with other kidney function tests such as GRF and Creatinine in order to determine if there are any concerns about kidney function.	
Lab Test Explanation for BUN at Functional Low: BUN Your result for this lab test is in the FUNCTIONAL LOW range. BUN (or Blood Urea Nitrogen) is one of the tests to measure kidney function. As proteins are broken down in your digestive system from your diet, your liver will process and utilize these proteins and produce a waste product called Urea. This waste product (Urea) is then removed from your blood by the kidneys. A HIGHER than optimal BUN would create a concern for kidney function, but this should first be correlated with other kidney function tests such as GFR and Creatinine. A Functional Low BUN may create concerns for liver function because Urea is produce almost entirely within the liver, but this should be correlated with other liver function lab tests to determine if there are any concerns about liver function. Because Urea is a waste product from protein digestion and metabolism . . . a low Urea may also be due to a diet that is low in protein, or a person who is not digesting or absorbing protein properly due to low digestive enzymes or other digestive issues.	Special Instructions at Functional Low:
Lab Test Explanation for BUN at Clinical Low: BUN Your result for this lab test is in the CLINICAL LOW range. BUN (or Blood Urea Nitrogen) is one of the tests to measure kidney function. As proteins are broken down in your digestive system from your diet, your liver will process and utilize these proteins and produce a waste product called Urea. This waste product (Urea) is then removed from your blood by the kidneys. A HIGHER than optimal BUN would create a concern for kidney function, but this should first be correlated with other kidney function tests such as GFR and Creatinine. A Clinical Low BUN may create concerns for liver function because Urea is produce almost entirely within the liver, but this should first be correlated with other liver function tests to determine if there are any concerns about liver function. Because Urea is a waste product from protein digestion and metabolism . . . a low Urea may also be due to a diet that is low in protein, or a person who is not digesting or absorbing protein properly due to low digestive enzymes or other digestive issues.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Creatinine, Serum	Clinical High	1.01 or higher								
	Functional High	0.96 - 1.00								
	Optimal	0.75 - 0.95								
	Functional Low	0.57 - 0.74								
	Clinical Low	0.00 - 0.56								

Lab Test Explanation for Creatinine, Serum at Clinical High:
Creatinine, Serum

Your result for this lab test is in the CLINICAL HIGH range. Creatinine is found within muscle tissue and is released into the blood stream during muscle contraction or breakdown of muscle tissue. Since almost all Creatinine is removed by the kidneys . . . testing blood levels of Creatinine is a good measure of how well the kidneys are working. Creatinine is also relative to the amount of muscle on the body, so a person with higher muscle mass will have slightly higher Creatinine levels and a person with low muscle mass will have slightly lower levels. Creatinine is derived from Creatine which is used as a source of energy in muscle contraction and is produced mostly within in the liver. Remembering the difference between Creatinine and Creatine can be confusing because the words are so similar, so it helps to understand the sequence of events leading up to Creatinine getting released into the blood. First - Creatine is made in the liver and then transported to the muscle tissue to be used as an energy source for muscle contraction. Second - Creatinine then gets released into the blood due to muscle contraction or other conditions that result in muscle tissue breakdown.

When Serum Creatinine is in the Clinical High range we must first consider if there is a problem with kidney function, and this should be correlated with other kidney function tests like BUN and GFR. High Creatinine combined with a high BUN (Blood Urea Nitrogen) and low GFR (Glomerular Filtration Rate) will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease. High Creatinine can also be caused by other factors such as 1) dehydration, 2) extreme exercise (extreme muscle contraction) prior to getting your blood sample taken, 3) very high protein intake in diet, 4) high intake of a nutritional supplement called Creatine, 5) high Vitamin C intake, 6) any condition that results in faster breakdown or damage of muscle tissue, and 7) can be caused by some medications. It could also be that the kidneys are working fine but the flow of urine from the kidneys to the bladder and out of the body is being slowed down or obstructed due to an enlarged uterus or enlarged prostate. This would result in a back-up of Creatinine in the kidneys and then higher levels found in the blood and may require additional testing or examination to confirm.

Special Instructions at Clinical High:

Lab Test Explanation for Creatinine, Serum at Functional High:
Creatinine, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Creatinine is found within muscle tissue and is released into the blood stream during muscle contraction or breakdown of muscle tissue. Since almost all Creatinine is removed by the

Special Instructions at Functional High:

kidneys . . . testing blood levels of Creatinine is a good measure of how well the kidneys are working. Creatinine is also relative to the amount of muscle on the body, so a person with higher muscle mass will have slightly higher Creatinine levels and a person with low muscle mass will have slightly lower levels. Creatinine is derived from Creatine which is used as a source of energy in muscle contraction and is produced mostly within in the liver. Remembering the difference between Creatinine and Creatine can be confusing because the words are so similar, so it helps to understand the sequence of events leading up to Creatinine getting released into the blood. First - Creatine is made in the liver and then transported to the muscle tissue to be used as an energy source for muscle contraction. Second - Creatinine then gets released into the blood due to muscle contraction or other conditions that result in muscle tissue breakdown. When Serum Creatinine is in the Functional High range we must first consider if there is a problem with kidney function, and this should be correlated with other kidney function tests like BUN and GFR. High Creatinine combined with a high BUN (Blood Urea Nitrogen) and low GFR (Glomerular Filtration Rate) will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease. High Creatinine can also be caused by other factors such as 1) dehydration, 2) extreme exercise (extreme muscle contraction) prior to getting your blood sample taken, 3) very high protein intake in diet, 4) high intake of a nutritional supplement called Creatine, 5) high Vitamin C intake, 6) any condition that results in faster breakdown or damage of muscle tissue, and 7) can be caused by some medications. It could also be that the kidneys are working fine but the flow of urine from the kidneys to the bladder and out of the body is being slowed down or obstructed due to an enlarged uterus or enlarged prostate. This would result in a back-up of Creatinine in the kidneys and then higher levels found in the blood and may require additional testing or examination to confirm.	
Lab Test Explanation for Creatinine, Serum at Optimal: Creatinine, Serum Your result for this lab test is in the OPTIMAL range. Creatinine is found within muscle tissue and is released into the blood stream during muscle contraction or breakdown of muscle tissue. Since almost all Creatinine is removed by the kidneys . . . testing blood levels of Creatinine is a good measure of how well the kidneys are working. Creatinine is also relative to the amount of muscle on the body, so a person with higher muscle mass will have slightly higher Creatinine levels and a person with low muscle mass will have slightly lower levels. Creatinine is derived from Creatine which is used as a source of energy in muscle contraction and is produced mostly within in the liver. Remembering the difference between Creatinine and Creatine can be confusing because the words are so similar, so it helps to understand the sequence of events leading up to Creatinine getting released into the blood. First - Creatine is made in the liver and then transported to the muscle tissue to be used as an energy source for muscle contraction. Second - Creatinine then gets released into the blood due to muscle contraction or other conditions that result in muscle tissue breakdown.	Special Instructions at Optimal:
Lab Test Explanation for Creatinine, Serum at Functional Low: Creatinine, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Creatinine is found within muscle tissue and is released into the blood stream during muscle contraction or breakdown of muscle tissue. Since almost all Creatinine is removed by the	Special Instructions at Functional Low:

kidneys . . . testing blood levels of Creatinine is a good measure of how well the kidneys are working. Creatinine is also relative to the amount of muscle on the body, so a person with higher muscle mass will have slightly higher Creatinine levels and a person with low muscle mass will have slightly lower levels. Creatinine is derived from Creatine which is used as a source of energy in muscle contraction and is produced mostly within in the liver. Remembering the difference between Creatinine and Creatine can be confusing because the words are so similar, so it helps to understand the sequence of events leading up to Creatinine getting released into the blood. First - Creatine is made in the liver and then transported to the muscle tissue to be used as an energy source for muscle contraction. Second - Creatinine then gets released into the blood due to muscle contraction or other conditions that result in muscle tissue breakdown. When Serum Creatinine is in the Functional Low range we must first consider if this is due to low muscle mass, such as in the elderly or in a small-framed individual. This could also be due to very low protein intake in the diet, or some type of disease or condition resulting in low muscle mass. Since Creatinine is derived from Creatine (which is produce by the liver) a low Creatinine can also indicate poor liver function and should be correlated with other liver function tests to determine a problem or disease process within the liver.	
Lab Test Explanation for Creatinine, Serum at Clinical Low: Creatinine, Serum Your result for this lab test is in the CLINICAL LOW range. Creatinine is found within muscle tissue and is released into the blood stream during muscle contraction or breakdown of muscle tissue. Since almost all Creatinine is removed by the kidneys . . . testing blood levels of Creatinine is a good measure of how well the kidneys are working. Creatinine is also relative to the amount of muscle on the body, so a person with higher muscle mass will have slightly higher Creatinine levels and a person with low muscle mass will have slightly lower levels. Creatinine is derived from Creatine which is used as a source of energy in muscle contraction and is produced mostly within in the liver. Remembering the difference between Creatinine and Creatine can be confusing because the words are so similar, so it helps to understand the sequence of events leading up to Creatinine getting released into the blood. First - Creatine is made in the liver and then transported to the muscle tissue to be used as an energy source for muscle contraction. Second - Creatinine then gets released into the blood due to muscle contraction or other conditions that result in muscle tissue breakdown. When Serum Creatinine is in the Clinical Low range we must first consider if this is due to low muscle mass, such as in the elderly or in a small-framed individual. This could also be due to very low protein intake in the diet, or some type of disease or condition resulting in low muscle mass. Since Creatinine is derived from Creatine (which is produce by the liver) a low Creatinine can also indicate poor liver function and should be correlated with other liver function tests to determine a problem or disease process within the liver.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
eGFR	Clinical High	NA								
	Functional High	NA								
	Optimal	90 or higher								
	Functional Low	60 - 89								
	Clinical Low	0 - 59								

Lab Test Explanation for eGFR (Glomerular Filtration rate) at Clinical High: NA	Special Instructions at Clinical High:
Lab Test Explanation for eGFR (Glomerular Filtration Rate) at Functional High: NA	Special Instructions at Functional High:
Lab Test Explanation for eGFR (Glomerular Filtration Rate) at Optimal: eGFR (Glomerular Filtration Rate) Your result for this lab test is in the OPTIMAL range. GFR (Glomerular Filtration Rate) is a measure of your kidney function, and the concern is when the GFR number drops too low. Within your kidneys are small clusters of blood vessels called Glomeruli which act like tiny filters in the kidneys that remove waste products out of your blood, while still keeping the good things we need to remain in your blood - like protein and red blood cells. The GFR refers to the amount of blood that is filtered by the Glomeruli per minute. As kidney function declines due to disease or damage, the rate at which your blood gets filtered by your kidneys also decreases and waste products begin to build-up in your blood. This lab test combines your level of Creatinine with a formula that factors in your age, sex and race to determine your eGFR (estimated Glomerular Filtration Rate). Low GFR along with a high BUN (Blood Urea Nitrogen) and high Creatinine will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease.	Special Instructions at Optimal:
Lab Test Explanation for eGFR (Glomerular Filtration Rate) at Functional Low: eGFR (Glomerular Filtration rate) Your result for this lab test is in the FUNCTIONAL LOW range. GFR (Glomerular Filtration Rate) is a measure of your kidney function, and the concern is when the GFR number drops too low. Within your kidneys are small clusters of blood vessels called Glomeruli which act like tiny filters in the kidneys that remove waste products out of your blood, while still keeping the good things we need to remain in your blood - like protein and red blood cells. The GFR refers to the amount of blood that is filtered by the Glomeruli per minute. As kidney function declines due to disease or damage, the rate at which your blood gets filtered by your kidneys also decreases and waste products begin to build-up in your blood. This lab test combines your level of Creatinine with a formula that factors in your age, sex and race to determine your eGFR	Special Instructions at Functional Low:

(estimated Glomerular Filtration Rate). Low GFR along with a high BUN (Blood Urea Nitrogen) and high Creatinine will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease.	
Lab Test Explanation for eGFR (Glomerular Filtration Rate) at Clinical Low: eGFR (Glomerular Filtration Rate) Your result for this lab test is in the CLINICAL LOW range. GFR (Glomerular Filtration Rate) is a measure of your kidney function, and the concern is when the GFR number drops too low. Within your kidneys are small clusters of blood vessels called Glomeruli which act like tiny filters in the kidneys that remove waste products out of your blood, while still keeping the good things we need to remain in your blood - like protein and red blood cells. The GFR refers to the amount of blood that is filtered by the Glomeruli per minute. As kidney function declines due to disease or damage, the rate at which your blood gets filtered by your kidneys also decreases and waste products begin to build-up in your blood. This lab test combines your level of Creatinine with a formula that factors in your age, sex and race to determine your eGFR (estimated Glomerular Filtration Rate). Low GFR along with a high BUN (Blood Urea Nitrogen) and high Creatinine will create the greatest concern for altered kidney function and may require further evaluation with a specialist to determine the cause of abnormal kidney function or confirm the presence of kidney disease.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
BUN/Creatinine Ratio	Clinical High	24 or higher								
	Functional High	20 - 23								
	Optimal	10 - 19								
	Functional Low	6 - 9								
	Clinical Low	0 - 5								

Lab Test Explanation for BUN/Creatinine Ratio at Clinical High: BUN/Creatinine Ratio Your result for this lab test is in the CLINICAL HIGH range. The BUN/Creatinine Ratio is a measure of kidney function that compares the ratio between BUN and Creatinine. This lab test is primarily useful for those that have already been diagnosed with some type of chronic kidney dysfunction or disease. This lab test needs to be viewed in relation to other kidney function tests. Because many things can change the results for BUN and Creatinine as individual tests . . . a slightly altered BUN/Creatinine Ratio is of little concern when other kidney function tests are normal.	Special Instructions at Clinical High:

Lab Test Explanation for BUN/Creatinine Ratio at Functional High: BUN/Creatinine Ratio Your result for this lab test is in the FUNCTIONAL HIGH range. The BUN/Creatinine Ratio is a measure of kidney function that compares the ratio between BUN and Creatinine. This lab test is primarily useful for those that have already been diagnosed with some type of chronic kidney dysfunction or disease. This lab test needs to be viewed in relation to other kidney function tests. Because many things can change the results for BUN and Creatinine as individual tests . . . a slightly altered BUN/Creatinine Ratio is of little concern when other kidney function tests are normal.	Special Instructions at Functional High:
Lab Test Explanation for BUN/Creatinine Ratio at Optimal: BUN/Creatinine Ratio Your result for this lab test is in the OPTIMAL range. The BUN/Creatinine Ratio is a measure of kidney function that compares the ratio between BUN and Creatinine. This lab test is primarily useful for those that have already been diagnosed with some type of chronic kidney dysfunction or disease. This lab test needs to be viewed in relation to other kidney function tests. Because many things can change the results for BUN and Creatinine as individual tests . . . a slightly altered BUN/Creatinine Ratio is of little concern when other kidney function tests are normal.	Special Instructions at Optimal:
Lab Test Explanation for BUN/Creatinine Ratio at Functional Low: BUN/Creatinine Ratio Your result for this lab test is in the FUNCTIONAL LOW range. The BUN/Creatinine Ratio is a measure of kidney function that compares the ratio between BUN and Creatinine. This lab test is primarily useful for those that have already been diagnosed with some type of chronic kidney dysfunction or disease. This lab test needs to be viewed in relation to other kidney function tests. Because many things can change the results for BUN and Creatinine as individual tests . . . a slightly altered BUN/Creatinine Ratio is of little concern when other kidney function tests are normal.	Special Instructions at Functional Low:
Lab Test Explanation for BUN/Creatinine Ratio at Clinical Low: BUN/Creatinine Ratio Your result for this lab test is in the CLINICAL LOW range. The BUN/Creatinine Ratio is a measure of kidney function that compares the ratio between BUN and Creatinine. This lab test is primarily useful for those that have already been diagnosed with some type of chronic kidney dysfunction or disease. This lab test needs to be viewed in relation to other kidney function tests. Because many things can change the results for BUN and Creatinine as individual tests . . . a slightly altered BUN/Creatinine Ratio is of little concern when other kidney function tests are normal.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Sodium, Serum	Clinical High	145 or higher								
	Functional High	142 - 144								
	Optimal	136 - 141								
	Functional Low	134 - 135								
	Clinical Low	0 - 133								

Lab Test Explanation for Sodium, Serum at Clinical High:
Sodium, Serum

Your result for this lab test is in the CLINICAL HIGH range. Sodium is an electrolyte that helps your cells to function normally and helps to regulate the amount of fluid in your body. Sodium is regulated by your kidneys and certain hormones . . . and is strongly influenced by adrenal hormone function. We get sodium in our body through our diet. Your body will use what it needs, and the kidneys will get rid of the rest in your urine to maintain sodium levels in a very narrow range within your blood. It is more common to see sodium levels too low in blood testing versus too high.

When sodium levels are in the Clinical High range we must first rule out dehydration as there are many people who have poor water intake and are chronically dehydrated. Secondly, we need to then rule out a kidney problem. Other reasons for high sodium levels in the blood include 1) excessive sodium intake in diet, 2) overactive or hyper-adrenal function, 3) blood sugar issues, 4) other hormone imbalance, and 5) as a side effect of some medications.

Special Instructions at Clinical High:

Lab Test Explanation for Sodium, Serum at Functional High:
Sodium, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Sodium is an electrolyte that helps your cells to function normally and helps to regulate the amount of fluid in your body. Sodium is regulated by your kidneys and certain hormones . . . and is strongly influenced by adrenal hormone function. We get sodium in our body through our diet. Your body will use what it needs, and the kidneys will get rid of the rest in your urine to maintain sodium levels in a very narrow range within your blood. It is more common to see sodium levels too low in blood testing versus too high.

When sodium levels are in the Functional High range we must first rule out dehydration as there are many people who have poor water intake and are chronically dehydrated. Secondly, we need to then rule out a kidney problem. Other reasons for high sodium levels in the blood include 1) excessive sodium intake in diet, 2) overactive or hyper-adrenal function, 3) blood sugar issues, 4) other hormone imbalance, and 5) as a side effect of some medications.

Special Instructions at Functional High:

Lab Test Explanation for Sodium, Serum at Optimal:
Sodium, Serum

Your result for this lab test is in the OPTIMAL range. Sodium is an electrolyte that helps your cells to function normally and helps to regulate the amount of fluid in your body. Sodium is regulated by your kidneys and certain hormones . . . and is strongly influenced by adrenal hormone function. We get sodium in our body through our diet. Your body will use what it needs, and the kidneys will get rid of the rest in your urine to maintain sodium levels in a very narrow range within your

Special Instructions at Optimal:

blood. It is more common to see sodium levels too low in blood testing versus too high.	
Lab Test Explanation for Sodium, Serum at Functional Low: Sodium, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Sodium is an electrolyte that helps your cells to function normally and helps to regulate the amount of fluid in your body. Sodium is regulated by your kidneys and certain hormones . . . and is strongly influenced by adrenal hormone function. We get sodium in our body through our diet. Your body will use what it needs, and the kidneys will get rid of the rest in your urine to maintain sodium levels in a very narrow range within your blood. It is more common to see sodium levels too low in blood testing versus too high. Sodium levels in the Functional Low range can come from many sources to include: 1) low salt intake, 2) kidney problems, 3) underactive or hypo-adrenal function, 4) blood sugar issues, 5) other hormone imbalance, 6) edema or retention of too much water in the body, and 7) as a side effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for Sodium, Serum at Clinical Low: Sodium, Serum Your result for this lab test is in the CLINICAL LOW range. Sodium is an electrolyte that helps your cells to function normally and helps to regulate the amount of fluid in your body. Sodium is regulated by your kidneys and certain hormones . . . and is strongly influenced by adrenal hormone function. We get sodium in our body through our diet. Your body will use what it needs, and the kidneys will get rid of the rest in your urine to maintain sodium levels in a very narrow range within your blood. It is more common to see sodium levels too low in blood testing versus too high. Sodium levels in the Clinical Low range can come from many sources to include: 1) low salt intake, 2) kidney problems, 3) underactive or hypo-adrenal function, 4) blood sugar issues, 5) other hormone imbalance, 6) edema or retention of too much water in the body, and 7) as a side effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Potassium, Serum	Clinical High	5.3 or higher								
	Functional High	4.7 - 5.2								
	Optimal	4.0 - 4.6								
	Functional Low	3.5 - 3.9								
	Clinical Low	0.0 - 3.4								

Lab Test Explanation for Potassium, Serum at Clinical High:
Potassium, Serum

Your result for this lab test is in the CLINICAL HIGH range. Potassium is an electrolyte that is critical to cell metabolism and muscle function . . . including the proper function of your heart muscle. Potassium also helps to regulate the amount of fluid in your body, and helps in maintaining an acid-alkaline balance within your body. Most of the potassium in your body is located inside of your cells, but we still measure potassium levels outside of your cells (in the serum) because even small changes in serum potassium can have big consequences to how your cells are functioning. Potassium is mostly regulated in your body by your kidneys and can serve as another indicator of kidney function, but potassium is also strongly influenced by adrenal hormone function and certain medications - such as diuretics.

When potassium levels are in the Clinical High range (referred to as hyperkalemia) we must first rule out any type of kidney disease or kidney problem. Because potassium is affected by many prescribed medications we must next determine if a person is taking any of these medications that decrease the loss of potassium from the body and cause it to build-up in the blood. These medications often include heart medications, blood pressure medications, potassium-sparing diuretics, and anti-inflammatory medications. Also be aware that falsely elevated potassium can result from poor handling of the blood sample, allowing it to sit too long before analysis, and a person clenching or pumping their fist too much at the time of blood draw. Therefore, a second blood draw may be performed to confirm potassium levels if there is enough concern. When these factors have been ruled out, we then look at more common functional reasons such as: 1) a person being dehydrated at the time of blood draw, 2) poor adrenal gland function, 3) poor control of blood sugar and insulin levels - such as diabetes, 4) some type of cell or tissue destruction within the body - since most potassium is located within the cell, 5) and higher than optimal potassium can be a good indicator that the body chemistry has become too acidic.

Special Instructions at Clinical High:

Lab Test Explanation for Potassium, Serum at Functional High:
Potassium, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Potassium is an electrolyte that is critical to cell metabolism and muscle function . . . including the proper function of your heart muscle. Potassium also helps to regulate the amount of fluid in your body, and helps in maintaining an acid-alkaline balance within your body. Most of the potassium in your body is located inside of your cells, but we still measure potassium levels outside of your cells (in the serum) because even

Special Instructions at Functional High:

small changes in serum potassium can have big consequences to how your cells are functioning. Potassium is mostly regulated in your body by your kidneys and can serve as another indicator of kidney function, but potassium is also strongly influenced by adrenal hormone function and certain medications - such as diuretics. When potassium levels are in the Functional High range we must first rule out any type of kidney disease or kidney problem. Because potassium is affected by many prescribed medications we must next determine if a person is taking any of these medications that decrease the loss of potassium from the body and cause it to build-up in the blood. These medications often include heart medications, blood pressure medications, potassium-sparing diuretics, and anti-inflammatory medications. Also be aware that falsely elevated potassium can result from poor handling of the blood sample, allowing it to sit too long before analysis, and a person clenching or pumping their fist too much at the time of blood draw. Therefore, a second blood draw may be performed to confirm potassium levels if there is enough concern. When these factors have been ruled out, we then look at more common functional reasons such as: 1) a person being dehydrated at the time of blood draw, 2) poor adrenal gland function, 3) poor control of blood sugar and insulin levels - such as diabetes, 4) some type of cell or tissue destruction within the body - since most potassium is located within the cell, 5) and higher than optimal potassium can be a good indicator that the body chemistry has become too acidic.	
Lab Test Explanation for Potassium, Serum at Optimal: Potassium, Serum Your result for this lab test is in the OPTIMAL range. Potassium is an electrolyte that is critical to cell metabolism and muscle function . . . including the proper function of your heart muscle. Potassium also helps to regulate the amount of fluid in your body, and helps in maintaining an acid-alkaline balance within your body. Most of the potassium in your body is located inside of your cells, but we still measure potassium levels outside of your cells (in the serum) because even small changes in serum potassium can have big consequences to how your cells are functioning. Potassium is mostly regulated in your body by your kidneys and can serve as another indicator of kidney function, but potassium is also strongly influenced by adrenal hormone function and certain medications - such as diuretics.	Special Instructions at Optimal:
Lab Test Explanation for Potassium, Serum at Functional Low: Potassium, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Potassium is an electrolyte that is critical to cell metabolism and muscle function . . . including the proper function of your heart muscle. Potassium also helps to regulate the amount of fluid in your body, and helps in maintaining an acid-alkaline balance within your body. Most of the potassium in your body is located inside of your cells, but we still measure potassium levels outside of your cells (in the serum) because even small changes in serum potassium can have big consequences to how your cells are functioning. Potassium is mostly regulated in your body by your kidneys and can serve as another indicator of kidney function, but potassium is also strongly influenced by adrenal hormone function and certain medications - such as diuretics. When potassium levels are in the Functional Low range it is not often due to poor dietary intake of potassium. We must first rule out a medication that is increasing potassium loss such as steroid medications, antibiotics and potassium-wasting	Special Instructions at Functional Low:

diuretics (commonly called “water pills”). We then look at more common functional reasons such as: 1) digestive problems that result in diarrhea and vomiting, 2) poor adrenal gland function, 3) poor control of blood sugar and insulin - such as diabetes, 4) and lower than optimal potassium can be a good indicator the body chemistry has become too alkaline.	
Lab Test Explanation for Potassium, Serum at Clinical Low: Potassium, Serum Your result for this lab test is in the CLINICAL LOW range. Potassium is an electrolyte that is critical to cell metabolism and muscle function . . . including the proper function of your heart muscle. Potassium also helps to regulate the amount of fluid in your body, and helps in maintaining an acid-alkaline balance within your body. Most of the potassium in your body is located inside of your cells, but we still measure potassium levels outside of your cells (in the serum) because even small changes in serum potassium can have big consequences to how your cells are functioning. Potassium is mostly regulated in your body by your kidneys and can serve as another indicator of kidney function, but potassium is also strongly influenced by adrenal hormone function and certain medications - such as diuretics. When potassium levels are in the Clinical Low range it is not often due to poor dietary intake of potassium. We must first rule out a medication that is increasing potassium loss such as steroid medications, antibiotics and potassium-wasting diuretics (commonly called “water pills”). We then look at more common functional reasons such as: 1) digestive problems that result in diarrhea and vomiting, 2) poor adrenal gland function, 3) poor control of blood sugar and insulin - such as diabetes, 4) and lower than optimal potassium can be a good indicator the body chemistry has become too alkaline.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Chloride, Serum	Clinical High	109 or higher								
	Functional High	106 - 108								
	Optimal	100 - 105								
	Functional Low	97 - 99								
	Clinical Low	0 - 96								

Lab Test Explanation for Chloride, Serum at Clinical High: Chloride, Serum Your result for this lab test is in the CLINICAL HIGH range. Chloride is an electrolyte which helps to regulate the fluid in the body and to maintain the acid-alkaline balance in your body. Most chloride in your body is consumed through food and	Special Instructions at Clinical High:

table salt (sodium chloride). Chloride levels will most often change in the same direction as sodium due to the relationship between the two. Chloride can also exert an effect on blood pressure, with some research indicating that higher chloride levels contribute to higher blood pressure. Chloride is also drawn from the blood and used in the production of stomach acid (hydrochloric acid) which is important for proper digestion of foods. When Chloride levels are in the Clinical High range it often indicates a person is dehydrated, but this can also occur with several other conditions such as: 1) Kidney problems, 2) overactive or hyper-adrenal function, 3) a body chemistry that has become too acidic, 4) excessive salt intake, and 5) the effect of some medications.	
Lab Test Explanation for Chloride, Serum at Functional High: Chloride, Serum Your result for this lab test is in the FUNCTIONAL HIGH range. Chloride is an electrolyte which helps to regulate the fluid in the body and to maintain the acid-alkaline balance in your body. Most chloride in your body is consumed through food and table salt (sodium chloride). Chloride levels will most often change in the same direction as sodium due to the relationship between the two. Chloride can also exert an effect on blood pressure, with some research indicating that higher chloride levels contribute to higher blood pressure. Chloride is also drawn from the blood and used in the production of stomach acid (hydrochloric acid) which is important for proper digestion of foods. When Chloride levels are in the Functional High range it often indicates a person is dehydrated, but this can also occur with several other conditions such as: 1) Kidney problems, 2) overactive or hyper-adrenal function, 3) a body chemistry that has become too acidic, 4) excessive salt intake, and 5) the effect of some medications.	Special Instructions at Functional High:
Lab Test Explanation for Chloride, Serum at Optimal: Chloride, Serum Your result for this lab test is in the OPTIMAL range. Chloride is an electrolyte which helps to regulate the fluid in the body and to maintain the acid-alkaline balance in your body. Most chloride in your body is consumed through food and table salt (sodium chloride). Chloride levels will most often change in the same direction as sodium due to the relationship between the two. Chloride can also exert an effect on blood pressure, with some research indicating that higher chloride levels contribute to higher blood pressure. Chloride is also drawn from the blood and used in the production of stomach acid (hydrochloric acid) which is important for proper digestion of foods.	Special Instructions at Optimal:
Lab Test Explanation for Chloride, Serum at Functional Low: Chloride, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Chloride is an electrolyte which helps to regulate the fluid in the body and to maintain the acid-alkaline balance in your body. Most chloride in your body is consumed through food and table salt (sodium chloride). Chloride levels will most often change in the same direction as sodium due to the relationship between the two. Chloride can also exert an effect on blood pressure, with some research indicating that higher chloride levels contribute to higher blood pressure. Chloride is also drawn from the blood and used in the production of stomach acid (hydrochloric acid) which is important for proper digestion of foods. When Chloride levels are in the Functional Low range we become more concerned about how this is affecting the production of stomach acid and overall digestion. Chloride in the blood is one of the main elements needed for your	Special Instructions at Functional Low:

stomach to produce hydrochloric acid. A low Chloride level could also be due to: 1) a body chemistry that is too alkaline, 2) underactive or hypo-adrenal function, and 3) the effect of some medications.	
Lab Test Explanation for Chloride, Serum at Clinical Low: Chloride, Serum Your result for this lab test is in the CLINICAL LOW range. Chloride is an electrolyte which helps to regulate the fluid in the body and to maintain the acid-alkaline balance in your body. Most chloride in your body is consumed through food and table salt (sodium chloride). Chloride levels will most often change in the same direction as sodium due to the relationship between the two. Chloride can also exert an effect on blood pressure, with some research indicating that higher chloride levels contribute to higher blood pressure. Chloride is also drawn from the blood and used in the production of stomach acid (hydrochloric acid) which is important for proper digestion of foods. When Chloride levels are in the Clinical Low range we become more concerned about how this is affecting the production of stomach acid and overall digestion. Chloride in the blood is one of the main elements needed for your stomach to produce hydrochloric acid. A low Chloride level could also be due to: 1) a body chemistry that is too alkaline, 2) underactive or hypo-adrenal function, and 3) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Carbon Dioxide, Total	Clinical High	29 or higher								
	Functional High	NA								
	Optimal	24 - 28								
	Functional Low	19 - 23								
	Clinical Low	0 - 18								

Lab Test Explanation for Carbon Dioxide, Total at Clinical High: Carbon Dioxide, Total Your result for this lab test is in the CLINICAL HIGH range. The Total Carbon Dioxide is actually a measure of a bicarbonate molecule, and not a measure of the CO2 gas in the blood since carbon dioxide occurs mostly in the form of a bicarbonate molecule. Bicarbonate in the blood is controlled primarily by the kidneys, and it helps to neutralize metabolic acids within the body and is important in maintaining the acid-alkaline balance of your body chemistry. Bicarbonate (or Total CO2) is usually ordered as part of an electrolyte panel to help understand if a person if suffering from an electrolyte imbalance and is a good general measure of the acid - alkaline balance of your body chemistry. When the Total Carbon Dioxide	Special Instructions at Clinical High:

measurement is outside the optimal range we must first consider if this is due to a respiratory (lung) problem or a metabolic (body chemistry) problem. When Total Carbon Dioxide is in the Clinical High range we must first consider if this is due to a respiratory (lung) problem or a metabolic (body chemistry) problem. In a respiratory problem the lungs are not able to remove Carbon Dioxide (CO2) gas from the blood as effectively, and CO2 begins to build-up in the blood. Carbon Dioxide as a blood gas is mainly an acid element, and the body will respond by producing more bicarbonate (which is really what is being measured in this blood test for Total Carbon Dioxide) to help reduce the acidity from this "respiratory acidosis". A person may need to see a specialist and have blood gas testing done to determine if the Clinical High CO2 is due to a respiratory issue. A metabolic problem leading to elevated Total Carbon Dioxide is most often indicating a more alkaline body chemistry from causes including: 1) a problem affecting the kidneys, 2) overactive or hyper-adrenal function, 3) blood sugar issues, 4) low stomach acid - especially if induce by excessive bicarbonate antacid intake, and 5) the effect of some medications.	
Lab Test Explanation for Carbon Dioxide, Total at Functional High: NA	Special Instructions at Functional High:
Lab Test Explanation for Carbon Dioxide, Total at Optimal: Carbon Dioxide, Total Your result for this lab test is in the OPTIMAL range. The Total Carbon Dioxide is actually a measure of a bicarbonate molecule, and not a measure of the CO2 gas in the blood since carbon dioxide occurs mostly in the form of a bicarbonate molecule. Bicarbonate in the blood is controlled primarily by the kidneys, and it helps to neutralize metabolic acids within the body and is important in maintaining the acid-alkaline balance of your body chemistry. Bicarbonate (or Total CO2) is usually ordered as part of an electrolyte panel to help understand if a person if suffering from an electrolyte imbalance and is a good general measure of the acid - alkaline balance of your body chemistry. When the Total Carbon Dioxide measurement is outside the optimal range we must first consider if this is due to a respiratory (lung) problem or a metabolic (body chemistry) problem.	Special Instructions at Optimal:
Lab Test Explanation for Carbon Dioxide, Total at Functional Low: Carbon Dioxide, Total Your result for this lab test is in the FUNCTIONAL LOW range. The Total Carbon Dioxide is actually a measure of a bicarbonate molecule, and not a measure of the CO2 gas in the blood since carbon dioxide occurs mostly in the form of a bicarbonate molecule. Bicarbonate in the blood is controlled primarily by the kidneys, and it helps to neutralize metabolic acids within the body and is important in maintaining the acid-alkaline balance of your body chemistry. Bicarbonate (or Total CO2) is usually ordered as part of an electrolyte panel to help understand if a person if suffering from an electrolyte imbalance and is a good general measure of the acid - alkaline balance of your body chemistry. When the Total Carbon Dioxide measurement is outside the optimal range we must first consider if this is due to a respiratory (lung) problem or a	Special Instructions at Functional Low:

metabolic (body chemistry) problem. When Total Carbon Dioxide is in the Functional Low range it's indicating the body chemistry is becoming more acidic. This could be due to many factors including: 1) overconsumption of acidic foods and beverages, 2) a problem affecting the kidneys, 3) underactive or hypo-adrenal function, 4) blood sugar issues - remember that excess sugar is acidic in the body, 5) a respiratory problem that results in excess loss of CO2 through the lungs, and 6) the effect of some medications.	
Lab Test Explanation for Carbon Dioxide, Total at Clinical Low: Carbon Dioxide, Total Your result for this lab test is in the CLINICAL LOW range. The Total Carbon Dioxide is actually a measure of a bicarbonate molecule, and not a measure of the CO2 gas in the blood since carbon dioxide occurs mostly in the form of a bicarbonate molecule. Bicarbonate in the blood is controlled primarily by the kidneys, and it helps to neutralize metabolic acids within the body and is important in maintaining the acid-alkaline balance of your body chemistry. Bicarbonate (or Total CO2) is usually ordered as part of an electrolyte panel to help understand if a person if suffering from an electrolyte imbalance and is a good general measure of the acid - alkaline balance of your body chemistry. When the Total Carbon Dioxide measurement is outside the optimal range we must first consider if this is due to a respiratory (lung) problem or a metabolic (body chemistry) problem. When Total Carbon Dioxide is in the Clinical Low range it's indicating the body chemistry is more acidic. This could be due to many factors including: 1) overconsumption of acidic foods and beverages, 2) a problem affecting the kidneys, 3) underactive or hypo-adrenal function, 4) blood sugar issues - remember that excess sugar is acidic in the body, 5) a respiratory problem that results in excess loss of CO2 through the lungs, and 6) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Calcium, Serum	Clinical High	10.3 or higher								
	Functional High	NA								
	Optimal	9.2 - 10.2								
	Functional Low	8.7 - 9.1								
	Clinical Low	0.0 - 8.6								

Lab Test Explanation for Calcium, Serum at Clinical High: Calcium, Serum	Special Instructions at Clinical High:

Your result for this lab test is in the CLINICAL HIGH range. Calcium is the most abundant mineral in the body, and the majority of the calcium in your body is stored in your bone tissue. Therefore, most people will associate calcium with bone density and preventing osteoporosis. However, calcium is involved in many other important functions of the body including muscle function, nervous system function, heart function, your immune system, blood clotting and the repair of damaged tissues, and more. Your ability to absorb calcium is highly dependent on having enough stomach acid (HCL) available during digestion, so low stomach acid can equal poor calcium absorption. Calcium levels in your blood are most greatly controlled by your parathyroid gland . . . which is a group of 4 small glands that sit on the backside of the thyroid gland (two on each side). Calcium levels are also strongly influenced by Vitamin D which helps improve the absorption of calcium from the intestines into the blood. Calcium travels in the blood in both a freely available ionized form, and in a non-available form that is bound to other proteins - most commonly albumin. This makes it important to also look at Serum Albumin levels when interpreting Serum Calcium levels. Please note that a low Serum Calcium does not automatically mean you are in need of additional calcium or that you are at risk for lower bone density, and is not a good method for tracking osteoporosis. Other factors should also be considered when interpreting Serum Calcium, such as magnesium levels, Vitamin D levels and how different hormones will influence calcium levels. When Serum Calcium is significantly elevated in the Clinical High range we must first consider a problem with the parathyroid gland. An increase in parathyroid hormone in the blood will also greatly increase the amount of calcium in the blood. A person with a highly elevated Serum Calcium will likely need more testing or to see a specialist (such as an endocrinologist) to determine the presence of a parathyroid problem. An overactive parathyroid gland resulting in a highly elevated Serum Calcium can have many health consequences. It will be more common to see Serum Calcium only slight elevated into the Clinical High range, and we must first consider if there is a thyroid problem. It is somewhat common to see a slightly elevated Serum Calcium when a person has an overactive thyroid gland - called hyperthyroidism, or if they are taking thyroid medication dose that is too high for their body. This should first be correlated with the thyroid lab testing to determine if there is a thyroid problem, or it their thyroid medication dose is appropriate. Slightly elevated calcium could also be due to: 1) Excessive Vitamin D intake, 2) destruction of cells releasing Calcium into the serum, 3) underactive or hypo-adrenal function, or 4) other hormone problem.	
Lab Test Explanation for Calcium, Serum at Functional High: NA	Special Instructions at Functional High:
Lab Test Explanation for Calcium, Serum at Optimal: Calcium, Serum Your result for this lab test is in the OPTIMAL range. Calcium is the most abundant mineral in the body, and the majority of the calcium in your body is stored in your bone tissue. Therefore, most people will associate calcium with bone density and preventing osteoporosis. However, calcium is involved in many other important functions of the body including muscle function, nervous system function, heart function, your immune system, blood clotting and the repair of damaged	Special Instructions at Optimal:

tissues, and more. Your ability to absorb calcium is highly dependent on having enough stomach acid (HCL) available during digestion, so low stomach acid can equal poor calcium absorption. Calcium levels in your blood are most greatly controlled by your parathyroid gland . . . which is a group of 4 small glands that sit on the backside of the thyroid gland (two on each side). Calcium levels are also strongly influenced by Vitamin D which helps improve the absorption of calcium from the intestines into the blood. Calcium travels in the blood in both a freely available ionized form, and in a non-available form that is bound to other proteins - most commonly albumin. This makes it important to also look at Serum Albumin levels when interpreting Serum Calcium levels. Please note that a low Serum Calcium does not automatically mean you are in need of additional calcium or that you are at risk for lower bone density, and is not a good method for tracking osteoporosis. Other factors should also be considered when interpreting Serum Calcium, such as magnesium levels, Vitamin D levels and how different hormones will influence calcium levels. When Serum Calcium levels are HIGHER than optimal we must consider if a person is taking too much Vitamin D in supplement form. Sometimes those people on thyroid medications can have slightly elevated calcium levels. Calcium levels in the blood are very carefully controlled by the body, so if blood testing reveals Serum Calcium to be at very high levels then this indicates some other problem in the body - possible with the parathyroid gland - and this person will likely need to go to a specialist for more testing. When Serum Calcium levels are LOWER than optimal we know that this could be due to several factors, but it is safe to conclude that the body may be in need of more calcium.	
Lab Test Explanation for Calcium, Serum at Functional Low: Calcium, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Calcium is the most abundant mineral in the body, and the majority of the calcium in your body is stored in your bone tissue. Therefore, most people will associate calcium with bone density and preventing osteoporosis. However, calcium is involved in many other important functions of the body including muscle function, nervous system function, heart function, your immune system, blood clotting and the repair of damaged tissues, and more. Your ability to absorb calcium is highly dependent on having enough stomach acid (HCL) available during digestion, so low stomach acid can equal poor calcium absorption. Calcium levels in your blood are most greatly controlled by your parathyroid gland . . . which is a group of 4 small glands that sit on the backside of the thyroid gland (two on each side). Calcium levels are also strongly influenced by Vitamin D3 which helps improve the absorption of calcium from the intestines into the blood. Calcium travels in the blood in both a freely available ionized form, and in a non-available form that is bound to other proteins - most commonly albumin. This makes it important to also look at Serum Albumin levels when interpreting Serum Calcium levels. Please note that a low Serum Calcium does not automatically mean you are in need of additional calcium or that you are at risk for lower bone density, and is not a good method for tracking osteoporosis. Other factors should also be considered when interpreting Serum Calcium, such as magnesium levels, Vitamin D levels and how different hormones will influence calcium levels. When Serum Calcium is in the Functional Low range this is indicating a possible need for increased calcium intake, but it could also indicate other factors such as: 1) a need for more Vitamin D3, 2) a need for other minerals like magnesium or phosphorus, 3) a need for more stomach acid (HCL) to improve the digestion and absorption of calcium, 4) underactive or	Special Instructions at Functional Low:

hypo-parathyroid function, 5) a body chemistry that is too acidic, and 6) too little protein intake.	
Lab Test Explanation for Calcium, Serum at Clinical Low: Calcium, Serum Your result for this lab test is in the CLINICAL LOW range. Calcium is the most abundant mineral in the body, and the majority of the calcium in your body is stored in your bone tissue. Therefore, most people will associate calcium with bone density and preventing osteoporosis. However, calcium is involved in many other important functions of the body including muscle function, nervous system function, heart function, your immune system, blood clotting and the repair of damaged tissues, and more. Your ability to absorb calcium is highly dependent on having enough stomach acid (HCL) available during digestion, so low stomach acid can equal poor calcium absorption. Calcium levels in your blood are most greatly controlled by your parathyroid gland . . . which is a group of 4 small glands that sit on the backside of the thyroid gland (two on each side). Calcium levels are also strongly influenced by Vitamin D which helps improve the absorption of calcium from the intestines into the blood. Calcium travels in the blood in both a freely available ionized form, and in a non-available form that is bound to other proteins - most commonly albumin. This makes it important to also look at Serum Albumin levels when interpreting Serum Calcium levels. Please note that a low Serum Calcium does not automatically mean you are in need of additional calcium or that you are at risk for lower bone density, and is not a good method for tracking osteoporosis. Other factors should also be considered when interpreting Serum Calcium, such as magnesium levels, Vitamin D levels and how different hormones will influence calcium levels. When Serum Calcium is in the Clinical Low range we must first consider if this is due to an underactive or hypo-parathyroid gland function and a person my need to see a specialist for more testing. Once a parathyroid problem has been ruled out, we then consider other factors such as: 1) a need for more Vitamin D3, 2) a need for other minerals like magnesium or phosphorus, 3) a need for more stomach acid (HCL) to improve the digestion and absorption of calcium, 4) a body chemistry that is too acidic, and 5) too little protein intake.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Phosphorus, Serum	Clinical High	4.6 or higher								
	Functional High	4.1 - 4.5								
	Optimal	3.0 - 4.0								
	Functional Low	2.5 - 2.9								
	Clinical Low	0.0 - 2.4								

Lab Test Explanation for Phosphorus, Serum at Clinical High:
Phosphorus, Serum

Your result for this lab test is in the CLINICAL HIGH range. Phosphorus - sometimes referred to as phosphate - is vital for energy (ATP) production, muscle and nerve function, bone tissue, and in helping to maintain the acid-alkaline balance of your body chemistry. The majority of Phosphorus in your body is stored in bone tissue, and it is regulate by the parathyroid gland via parathyroid hormone. Phosphorus levels are closely connected to Calcium levels with an inverse relationship between the two . . . meaning that as Calcium levels increase Phosphorus levels will decrease and vice versa. An excess of one will cause the kidneys to excrete the other. Phosphorus is also general indicator of digestive function with lower phosphorus levels indicating low stomach acid (HCL). Phosphorus levels are normally higher in children compared to adults because their bones are actively growing.

When Serum Phosphorus is in the Clinically High range we must first consider an underactive or hypo-parathyroid gland function, and this may require seeing a specialist for additional testing. Other factors that can result in a high Serum Phosphorus include: 1) a problem with the kidneys, 2) taking too much Vitamin D, 3) other hormone imbalance, 4) a normal finding in bone growth and bone repair - such as when bone fractures are healing, 5) high intake of soda pop which has Phosphoric Acid - which can result in increased loss of Calcium from the body, or 6) a possible a liver problem.

Special Instructions at Clinical High:

Lab Test Explanation for Phosphorus, Serum at Functional High:
Phosphorus, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Phosphorus - sometimes referred to as phosphate - is vital for energy (ATP) production, muscle and nerve function, bone tissue, and in helping to maintain the acid-alkaline balance of your body chemistry. The majority of Phosphorus in your body is stored in bone tissue, and it is regulate by the parathyroid gland via parathyroid hormone. Phosphorus levels are closely connected to Calcium levels with an inverse relationship between the two . . . meaning that as Calcium levels increase Phosphorus levels will decrease and vice versa. An excess of one will cause the kidneys to excrete the other. Phosphorus is also general indicator of digestive function with lower phosphorus levels indicating low stomach acid (HCL). Phosphorus levels are normally higher in children compared to adults because their bones are actively growing.

Special Instructions at Functional High:

Phosphorus levels in the Functional High range can result from many factors to include: 1) a problem with the kidneys, 2) taking too much Vitamin D, 3) other hormone imbalance, 4) a normal finding in bone growth and bone repair - such as when bone fractures are healing, 5) high intake of soda pop which has Phosphoric Acid and can result in increased loss of Calcium from the body, or 6) a possible a liver problem.	
Lab Test Explanation for Phosphorus, Serum at Optimal: Phosphorus, Serum Your result for this lab test is in the OPTIMAL range. Phosphorus - sometimes referred to as phosphate - is vital for energy (ATP) production, muscle and nerve function, bone tissue, and in helping to maintain the acid-alkaline balance of your body chemistry. The majority of Phosphorus in your body is stored in bone tissue, and it is regulate by the parathyroid gland via parathyroid hormone. Phosphorus levels are closely connected to Calcium levels with an inverse relationship between the two . . . meaning that as Calcium levels increase Phosphorus levels will decrease and vice versa. An excess of one will cause the kidneys to excrete the other. Phosphorus is also general indicator of digestive function with lower phosphorus levels indicating low stomach acid (HCL). Phosphorus levels are normally higher in children compared to adults because their bones are actively growing.	Special Instructions at Optimal:
Lab Test Explanation for Phosphorus, Serum at Functional Low: Phosphorus, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Phosphorus - sometimes referred to as phosphate - is vital for energy (ATP) production, muscle and nerve function, bone tissue, and in helping to maintain the acid-alkaline balance of your body chemistry. The majority of Phosphorus in your body is stored in bone tissue, and it is regulate by the parathyroid gland via parathyroid hormone. Phosphorus levels are closely connected to Calcium levels with an inverse relationship between the two . . . meaning that as Calcium levels increase Phosphorus levels will decrease and vice versa. An excess of one will cause the kidneys to excrete the other. Phosphorus is also general indicator of digestive function with lower phosphorus levels indicating low stomach acid (HCL). Phosphorus levels are normally higher in children compared to adults because their bones are actively growing. When Serum Phosphorus is in the Functional Low range there are several factors that we must consider including: 1) Vitamin D deficiency, 2) low stomach acid, 3) other hormone imbalance, 4) diabetes or a high intake of sugars and carbohydrates, and 6) a possible a liver problem.	Special Instructions at Functional Low:
Lab Test Explanation for Phosphorus, Serum at Clinical Low: Phosphorus, Serum Your result for this lab test is in the CLINICAL LOW range. Phosphorus - sometimes referred to as phosphate - is vital for energy (ATP) production, muscle and nerve function, bone tissue, and in helping to maintain the acid-alkaline balance of your body chemistry. The majority of Phosphorus in your body is stored in bone tissue, and it is regulate by the parathyroid gland via parathyroid hormone. Phosphorus levels are closely connected to Calcium levels with an inverse relationship between the two . . . meaning that as Calcium levels increase Phosphorus levels will decrease and vice versa.	Special Instructions at Clinical Low:

An excess of one will cause the kidneys to excrete the other. Phosphorus is also general indicator of digestive function with lower phosphorus levels indicating low stomach acid (HCL). Phosphorus levels are normally higher in children compared to adults because their bones are actively growing. When Serum Phosphorus is in the Clinically Low range we must first consider an overactive or hyper-parathyroid gland function, and this may require seeing a specialist for additional testing. Other factors that can result in a low Serum Phosphorus include: 1) Vitamin D deficiency, 2) low stomach acid, 3) other hormone imbalance, 4) diabetes or a high intake of sugars and carbohydrates, and 6) a possible a liver problem.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Magnesium, Serum	Clinical High	2.7 or higher								
	Functional High	NA								
	Optimal	2.1 - 2.6								
	Functional Low	1.6 - 2.0								
	Clinical Low	0.0 - 1.5								

Lab Test Explanation for Magnesium, Serum at Clinical High: Magnesium, Serum Your result for this lab test is in the CLINICAL HIGH range. Magnesium is involved in hundreds of chemical and enzyme reactions within the body, and it's one of the most common mineral deficiencies. Magnesium is needed for many functions in the body to include: energy production, sugar metabolism, hormone balance, balance of brain chemistry, memory, heart function, and most notably for proper muscle function. About half of your magnesium is found within the soft tissues and muscles of your body, and the rest is in bone tissue. Your body needs enough magnesium for your muscles to relax properly. People who suffer with chronic muscle tightness, or even muscle cramps – such as "charlie horses" in the foot or calf muscles waking a person up from their sleep at night – are often symptoms of a magnesium deficiency. Magnesium not only affects the function of the skeletal muscles (the muscles that allow you to move your body), but it also affects the muscles that control your blood vessels. You have small muscles in your blood vessels that control how dilated (open) or contracted (closed) your blood vessels are. A magnesium deficiency could lead to tighter muscles in your blood vessels and result in them being more contracted (closed) and therefore higher blood pressure. Considering how common magnesium deficiency in our society is, this is likely to be one of many factors that contribute to High Blood Pressure. Taking magnesium may result in a decrease of chronically High Blood Pressure.	Special Instructions at Clinical High:

It is quite rare to see Serum Magnesium in the Clinical High range, and much more common to see this in a low range. When Serum Magnesium is in the Clinical High range we must consider: 1) a problem with the kidneys, 2) underactive or hypo-thyroid function, 3) excessive consumption of magnesium - such as in antacids or in supplement form, 4) other hormone imbalance, and 5) the effect of some medications.	
Lab Test Explanation for Magnesium, Serum at Functional High: Magnesium, Serum NA	Special Instructions at Functional High:
Lab Test Explanation for Magnesium, Serum at Optimal: Magnesium, Serum Your result for this lab test is in the OPTIMAL range. Magnesium is involved in hundreds of chemical and enzyme reactions within the body, and it's one of the most common mineral deficiencies. Magnesium is needed for many functions in the body to include: energy production, sugar metabolism, hormone balance, balance of brain chemistry, memory, heart function, and most notably for proper muscle function. About half of your magnesium is found within the soft tissues and muscles of your body, and the rest is in bone tissue. Your body needs enough magnesium for your muscles to relax properly. People who suffer with chronic muscle tightness, or even muscle cramps – such as "charlie horses" in the foot or calf muscles waking a person up from their sleep at night – are often symptoms of a magnesium deficiency. Magnesium not only affects the function of the skeletal muscles (the muscles that allow you to move your body), but it also affects the muscles that control your blood vessels. You have small muscles in your blood vessels that control how dilated (open) or contracted (closed) your blood vessels are. A magnesium deficiency could lead to tighter muscles in your blood vessels and result in them being more contracted (closed) and therefore higher blood pressure. Considering how common magnesium deficiency in our society is, this is likely to be one of many factors that contribute to High Blood Pressure. Taking magnesium may result in a decrease of chronically High Blood Pressure.	Special Instructions at Optimal:
Lab Test Explanation for Magnesium, Serum at Functional Low: Magnesium, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Magnesium is involved in hundreds of chemical and enzyme reactions within the body, and it's one of the most common mineral deficiencies. Magnesium is needed for many functions in the body to include: energy production, sugar metabolism, hormone balance, balance of brain chemistry, memory, heart function, and most notably for proper muscle function. About half of your magnesium is found within the soft tissues and muscles of your body, and the rest is in bone tissue. Your body needs enough magnesium for your muscles to relax properly. People who suffer with chronic muscle tightness, or even muscle cramps – such as "charlie horses" in the foot or calf muscles waking a person up from their sleep at night – are often symptoms of a magnesium deficiency. Magnesium not only affects the function of the skeletal muscles (the muscles that allow you to move your body), but it also	Special Instructions at Functional Low:

affects the muscles that control your blood vessels. You have small muscles in your blood vessels that control how dilated (open) or contracted (closed) your blood vessels are. A magnesium deficiency could lead to tighter muscles in your blood vessels and result in them being more contracted (closed) and therefore higher blood pressure. Considering how common magnesium deficiency in our society is, this is likely to be one of many factors that contribute to High Blood Pressure. Taking magnesium may result in a decrease of chronically High Blood Pressure. When Serum Magnesium is in the Functional Low range we must first consider an actual Magnesium deficiency and the body is in need of more Magnesium. Other reasons for low magnesium could include: 1) a problem with the kidneys, 2) overactive or hyper-thyroid function, 3) other hormone imbalance, 4) a liver problem, 5) poor absorption of magnesium due to a digestive problem, and 6) the effect of some medications.	
Lab Test Explanation for Magnesium, Serum at Clinical Low: Magnesium, Serum Your result for this lab test is in the CLINICAL LOW range. Magnesium is involved in hundreds of chemical and enzyme reactions within the body, and it's one of the most common mineral deficiencies. Magnesium is needed for many functions in the body to include: energy production, sugar metabolism, hormone balance, balance of brain chemistry, memory, heart function, and most notably for proper muscle function. About half of your magnesium is found within the soft tissues and muscles of your body, and the rest is in bone tissue. Your body needs enough magnesium for your muscles to relax properly. People who suffer with chronic muscle tightness, or even muscle cramps – such as "charlie horses" in the foot or calf muscles waking a person up from their sleep at night – are often symptoms of a magnesium deficiency. Magnesium not only affects the function of the skeletal muscles (the muscles that allow you to move your body), but it also affects the muscles that control your blood vessels. You have small muscles in your blood vessels that control how dilated (open) or contracted (closed) your blood vessels are. A magnesium deficiency could lead to tighter muscles in your blood vessels and result in them being more contracted (closed) and therefore higher blood pressure. Considering how common magnesium deficiency in our society is, this is likely to be one of many factors that contribute to High Blood Pressure. Taking magnesium may result in a decrease of chronically High Blood Pressure. When Serum Magnesium is in the Clinical Low range we must first consider an actual Magnesium deficiency and the body is in need of more Magnesium. Other reasons for low magnesium could include: 1) a problem with the kidneys, 2) overactive or hyper-thyroid function, 3) other hormone imbalance, 4) a liver problem, 5) poor absorption of magnesium due to a digestive problem, and 6) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Protein, Total, Serum	Clinical High	8.6 or higher								
	Functional High	8.1 - 8.5								
	Optimal	7.0 - 8.0								
	Functional Low	6.0 - 6.9								
	Clinical Low	0.0 - 5.9								

Lab Test Explanation for Total Protein, Serum at Clinical High:
Total Protein, Serum

Your result for this lab test is in the CLINICAL HIGH range. Protein is an important building block for all the cells and tissues in your body. Protein is needed for the growth and repair of tissue, and makes up an important part of the structure of your organs, enzymes and hormones within your body. Total Protein is a measure of the two classes of proteins found within the blood called Albumin and Globulin. Albumin makes up about 60% of the Total protein, and Globulin makes up about 40%. It is important to consider the individual lab tests for Albumin and Globulin when evaluating Total Protein levels. Total Protein can be a good general indicator for liver function, kidney function and digestive problems.

When Total Protein is in a Clinical High range we must first consider if a person is dehydrated. Other factors that may contribute to high Total Protein include: 1) a very high protein diet, 2) a liver/gall bladder problem, 3) underactive or hypo-adrenal function, 4) an auto-immune or inflammatory condition, 5) high Uric Acid, or 6) a digestive problem.

Special Instructions at Clinical High:

Lab Test Explanation for Total Protein, Serum at Functional High:
Total Protein, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Protein is an important building block for all the cells and tissues in your body. Protein is needed for the growth and repair of tissue, and makes up an important part of the structure of your organs, enzymes and hormones within your body. Total Protein is a measure of the two classes of proteins found within the blood called Albumin and Globulin. Albumin makes up about 60% of the Total protein, and Globulin makes up about 40%. It is important to consider the individual lab tests for Albumin and Globulin when evaluating Total Protein levels. Total Protein can be a good general indicator for liver function, kidney function and digestive problems.

When Total Protein is in a Functional High range we must first consider if a person is dehydrated. Other factors that may contribute to high Total Protein include: 1) a very high protein diet, 2) a liver/gall bladder problem, 3) underactive or hypo-adrenal function, 4) an auto-immune or inflammatory condition, 5) high Uric Acid, or 6) a digestive problem - such as low stomach acid.

Special Instructions at Functional High:

Lab Test Explanation for Total Protein, Serum at Optimal: Total Protein, Serum Your result for this lab test is in the OPTIMAL range. Protein is an important building block for all the cells and tissues in your body. Protein is needed for the growth and repair of tissue, and makes up an important part of the structure of your organs, enzymes and hormones within your body. Total Protein is a measure of the two classes of proteins found within the blood called Albumin and Globulin. Albumin makes up about 60% of the Total protein, and Globulin makes up about 40%. It is important to consider the individual lab tests for Albumin and Globulin when evaluating Total Protein levels. Total Protein can be a good general indicator for liver function, kidney function and digestive problems.	Special Instructions at Optimal:
Lab Test Explanation for Total Protein, Serum at Functional Low: Total Protein, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Protein is an important building block for all the cells and tissues in your body. Protein is needed for the growth and repair of tissue, and makes up an important part of the structure of your organs, enzymes and hormones within your body. Total Protein is a measure of the two classes of proteins found within the blood called Albumin and Globulin. Albumin makes up about 60% of the Total protein, and Globulin makes up about 40%. It is important to consider the individual lab tests for Albumin and Globulin when evaluating Total Protein levels. Total Protein can be a good general indicator for liver function, kidney function and digestive problems. When Total Protein is in a Functional Low range we must first consider if a person is not eating enough protein. Other factors that may contribute to low Total Protein include: 1) low stomach acid or low digestive enzymes, 2) digestive inflammation or other digestive problem resulting in poor absorption, 3) a liver/gall bladder problem, 4) overactive or hyper-adrenal function, 5) a problem affecting the kidneys, or 6) other hormone problem.	Special Instructions at Functional Low:
Lab Test Explanation for Total Protein, Serum at Clinical Low: Total Protein, Serum Your result for this lab test is in the CLINICAL LOW range. Protein is an important building block for all the cells and tissues in your body. Protein is needed for the growth and repair of tissue, and makes up an important part of the structure of your organs, enzymes and hormones within your body. Total Protein is a measure of the two classes of proteins found within the blood called Albumin and Globulin. Albumin makes up about 60% of the Total protein, and Globulin makes up about 40%. It is important to consider the individual lab tests for Albumin and Globulin when evaluating Total Protein levels. Total Protein can be a good general indicator for liver function, kidney function and digestive problems. When Total Protein is in a Clinical Low range we must first consider if a person is not eating enough protein. Other factors that may contribute to low Total Protein include: 1) low stomach acid or low digestive enzymes, 2) digestive inflammation or other digestive problem resulting in poor absorption, 3) a liver/gall bladder problem, 4) overactive or hyper-adrenal function, 5) a problem affecting the kidneys, or 6) other hormone problem.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Albumin, Serum	Clinical High	5.6 or higher								
	Functional High	5.1 - 5.5								
	Optimal	4.0 - 5.0								
	Functional Low	3.5 - 3.9								
	Clinical Low	0.0 - 3.4								

Lab Test Explanation for Albumin, Serum at Clinical High:
Albumin, Serum

Your result for this lab test is in the CLINICAL HIGH range. Albumin is a major protein found in the blood, and it is produced almost entirely within the liver. This makes Albumin a good indicator of liver function. You can think of Albumin as a "carrier protein" that helps to transport and deliver nutrients, hormones and other resources to the cells of your body so your cells can function at their best. When Albumin levels drop too low this is an indicator of poor health and possibly serious disease, because the cells of your body are no longer getting a good delivery of the important resources they need to function well due to the low Albumin levels.

When Serum Albumin is in the Clinical High range we must first consider if a person is dehydrated. Other factors that can contribute to a high Serum Albumin include: 1) underactive or hypo-thyroid function, or 2) underactive or hypo-adrenal function.

Special Instructions at Clinical High:

Lab Test Explanation for Albumin, Serum at Functional High:
Albumin, Serum

Your result for this lab test is in the FUNCTIONAL HIGH range. Albumin is a major protein found in the blood, and it is produced almost entirely within the liver. This makes Albumin a good indicator of liver function. You can think of Albumin as a "carrier protein" that helps to transport and deliver nutrients, hormones and other resources to the cells of your body so your cells can function at their best. When Albumin levels drop too low this is an indicator of poor health and possibly serious disease, because the cells of your body are no longer getting a good delivery of the important resources they need to function well due to the low Albumin levels.

When Serum Albumin is in the Functional High range we must first consider if a person is dehydrated. Other factors that can contribute to a high Serum Albumin include: 1) underactive or hypo-thyroid function, or 2) underactive or hypo-adrenal function.

Special Instructions at Functional High:

Lab Test Explanation for Albumin, Serum at Optimal:
Albumin, Serum

Special Instructions at Optimal:

Your result for this lab test is in the OPTIMAL range. Albumin is a major protein found in the blood, and it is produced almost entirely within the liver. This makes Albumin a good indicator of liver function. You can think of Albumin as a "carrier protein" that helps to transport and deliver nutrients, hormones and other resources to the cells of your body so your cells can function at their best. When Albumin levels drop too low this is an indicator of poor health and possibly serious disease, because the cells of your body are no longer getting a good delivery of the important resources they need to function well due to the low Albumin levels.	
Lab Test Explanation for Albumin, Serum at Functional Low: Albumin, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Albumin is a major protein found in the blood, and it is produced almost entirely within the liver. This makes Albumin a good indicator of liver function. You can think of Albumin as a "carrier protein" that helps to transport and deliver nutrients, hormones and other resources to the cells of your body so your cells can function at their best. When Albumin levels drop too low this is an indicator of poor health and possibly serious disease, because the cells of your body are no longer getting a good delivery of the important resources they need to function well due to the low Albumin levels. When Serum Albumin is in the Functional Low range we must first consider a problem with liver function. Other factors that can contribute to a low Serum Albumin include: 1) low protein intake in diet, 2) low stomach acid or low digestive enzymes not allowing a person to digest their proteins as well, 3) digestive inflammation or other digestive problem resulting in poor protein absorption, 4) a problem affecting the kidneys, or 5) chronic disease or chronic inflammation.	Special Instructions at Functional Low:
Lab Test Explanation for Albumin, Serum at Clinical Low: Albumin, Serum Your result for this lab test is in the CLINICAL LOW range. Albumin is a major protein found in the blood, and it is produced almost entirely within the liver. This makes Albumin a good indicator of liver function. You can think of Albumin as a "carrier protein" that helps to transport and deliver nutrients, hormones and other resources to the cells of your body so your cells can function at their best. When Albumin levels drop too low this is an indicator of poor health and possibly serious disease, because the cells of your body are no longer getting a good delivery of the important resources they need to function well due to the low Albumin levels. When Serum Albumin is in the Clinical Low range we must first consider a problem with liver function. Other factors that can contribute to a low Serum Albumin include: 1) low protein intake in diet, 2) low stomach acid or low digestive enzymes not allowing a person to digest their proteins as well, 3) digestive inflammation or other digestive problem resulting in poor protein absorption, 4) a problem affecting the kidneys, or 5) chronic disease or chronic inflammation.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Globulin, Total	Clinical High	4.6 or higher								
	Functional High	3.3 - 4.5								
	Optimal	2.3 - 3.2								
	Functional Low	1.5 - 2.2								
	Clinical Low	0.0 - 1.4								

Lab Test Explanation for Globulin, Total at Clinical High:
Globulin, Total

Your result for this lab test is in the CLINICAL HIGH range. Globulin is a term for all proteins in the blood that are not Albumin. Globulins are another type of "carrier protein" involved in the transport of some resources to your cells to help them function at their best. There are 4 fractions (or types) of Globulins in the blood that make up your number for Total Globulin. These 4 fractions are called: Alpha 1, Alpha 2, Beta and Gamma. Globulins are also an important part of your immune system and are critical in the formation of antibodies - also called immunoglobulins such as IgA, IgE, IgG and IgM - which are manufactured from the gamma fraction. The gamma fraction usually makes up the largest portion of the Total Globulin, so an abnormal Total Globulin would have us first thinking about some type of acute or chronic challenge to the immune system . . . but may be due to other factors as well. When Total Globulin is close to or within the Clinical High or Clinical Low ranges, an additional test called a serum protein electrophoresis should be considered to determine which fraction(s) are involved to allow for a better diagnosis.

When Total Globulin is in the Clinical High range we must first consider some type of activation of the immune system due to infection or other immune challenge. Other factors that can contribute to a high Total Globulin include: 1) low stomach acid, 2) some type of inflammatory condition, 3) an autoimmune condition, or 4) a liver problem.

Special Instructions at Clinical High:

Lab Test Explanation for Globulin, Total at Functional High:
Globulin, Total

Your result for this lab test is in the FUNCTIONAL HIGH range. Globulin is a term for all proteins in the blood that are not Albumin. Globulins are another type of "carrier protein" involved in the transport of some resources to your cells to help them function at their best. There are 4 fractions (or types) of Globulins in the blood that make up your number for Total Globulin. These 4 fractions are called: Alpha 1, Alpha 2, Beta and Gamma. Globulins are also an important part of your immune system and are critical in the formation of antibodies - also called immunoglobulins such as IgA, IgE, IgG and IgM - which are manufactured from the gamma fraction. The gamma fraction usually makes up the largest portion of the Total Globulin, so an abnormal Total Globulin would have us first thinking about some type of acute or chronic challenge to the immune system . . . but may be due to other factors as well. When Total Globulin is close to or within the Clinical High or Clinical Low ranges, an additional test called a serum protein electrophoresis should be considered to determine which

Special Instructions at Functional High:

fraction(s) are involved to allow for a better diagnosis. When Total Globulin is in the Functional High range we must first consider some type of activation of the immune system due to infection or other immune challenge. Other factors that can contribute to a high Total Globulin include: 1) low stomach acid, 2) some type of inflammatory condition, 3) an autoimmune condition, or 4) a liver problem.	
Lab Test Explanation for Globulin, Total at Optimal: Globulin, Total Your result for this lab test is in the OPTIMAL range. Globulin is a term for all proteins in the blood that are not Albumin. Globulins are another type of "carrier protein" involved in the transport of some resources to your cells to help them function at their best. There are 4 fractions (or types) of Globulins in the blood that make up your number for Total Globulin. These 4 fractions are called: Alpha 1, Alpha 2, Beta and Gamma. Globulins are also an important part of your immune system and are critical in the formation of antibodies - also called immunoglobulins such as IgA, IgE, IgG and IgM - which are manufactured from the gamma fraction. The gamma fraction usually makes up the largest portion of the Total Globulin, so an abnormal Total Globulin would have us first thinking about some type of acute or chronic challenge to the immune system . . . but may be due to other factors as well. When Total Globulin is close to or within the Clinical High or Clinical Low ranges, an additional test called a serum protein electrophoresis should be considered to determine which fraction(s) are involved to allow for a better diagnosis.	Special Instructions at Optimal:
Lab Test Explanation for Globulin, Total at Functional Low: Globulin, Total Your result for this lab test is in the FUNCTIONAL LOW range. Globulin is a term for all proteins in the blood that are not Albumin. Globulins are another type of "carrier protein" involved in the transport of some resources to your cells to help them function at their best. There are 4 fractions (or types) of Globulins in the blood that make up your number for Total Globulin. These 4 fractions are called: Alpha 1, Alpha 2, Beta and Gamma. Globulins are also an important part of your immune system and are critical in the formation of antibodies - also called immunoglobulins such as IgA, IgE, IgG and IgM - which are manufactured from the gamma fraction. The gamma fraction usually makes up the largest portion of the Total Globulin, so an abnormal Total Globulin would have us first thinking about some type of acute or chronic challenge to the immune system . . . but may be due to other factors as well. When Total Globulin is close to or within the Clinical High or Clinical Low ranges, an additional test called a serum protein electrophoresis should be considered to determine which fraction(s) are involved to allow for a better diagnosis. When Total Globulin is in the Functional Low range we must first consider an immune system that has been worn down due to some type of chronic infection or other immune challenge. Other factors that may contribute to a low Total Globulin include: 1) an inflammatory problem, 2) a liver problem, or 3) anemia.	Special Instructions at Functional Low:

Lab Test Explanation for Globulin, Total at Clinical Low:	Special Instructions at Clinical Low:
Globulin, Total Your result for this lab test is in the CLINICAL LOW range. Globulin is a term for all proteins in the blood that are not Albumin. Globulins are another type of "carrier protein" involved in the transport of some resources to your cells to help them function at their best. There are 4 fractions (or types) of Globulins in the blood that make up your number for Total Globulin. These 4 fractions are called: Alpha 1, Alpha 2, Beta and Gamma. Globulins are also an important part of your immune system and are critical in the formation of antibodies - also called immunoglobulins such as IgA, IgE, IgG and IgM - which are manufactured from the gamma fraction. The gamma fraction usually makes up the largest portion of the Total Globulin, so an abnormal Total Globulin would have us first thinking about some type of acute or chronic challenge to the immune system . . . but may be due to other factors as well. When Total Globulin is close to or within the Clinical High or Clinical Low ranges, an additional test called a serum protein electrophoresis should be considered to determine which fraction(s) are involved to allow for a better diagnosis. When Total Globulin is in the Clinical Low range we must first consider an immune system that has been worn down due to some type of chronic infection or other immune challenge. Other factors that may contribute to a low Total Globulin include: 1) an inflammatory problem, 2) a liver problem, or 3) anemia.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
A/G Ratio	Clinical High	2.6 or higher								
	Functional High	2.1 - 2.5								
	Optimal	1.5 - 2.0								
	Functional Low	1.1 - 1.4								
	Clinical Low	0.0 - 1.0								

Lab Test Explanation for A/G Ratio at Clinical High:	Special Instructions at Clinical High:
A/G Ratio Your result for this lab test is in the CLINICAL HIGH range. The A/G Ratio compares the level of Albumin to the level of Globulin. Factors that affect Albumin and Globulin will then affect the A/G Ratio. An A/G Ratio in the Clinical High or Clinical Low ranges will create a much greater concern for a developing or ongoing disease process within the body. Other factors that may contribute to a Clinical High A/G Ratio include: 1) dehydration, 2) underactive or hypo-thyroid function, or 3) underactive or hypo-adrenal function.	

Lab Test Explanation for A/G Ratio at Functional High: A/G Ratio Your result for this lab test is in the FUNCTIONAL HIGH range. The A/G Ratio compares the level of Albumin to the level of Globulin. Factors that affect Albumin and Globulin will then affect the A/G Ratio. An A/G Ratio in the Clinical High or Clinical Low ranges will create a much greater concern for a developing or ongoing disease process within the body. Other factors that may contribute to a Functional High A/G Ratio include: 1) dehydration, 2) underactive or hypo-thyroid function, or 3) underactive or hypo-adrenal function.	Special Instructions at Functional High:
Lab Test Explanation for A/G Ratio at Optimal: A/G Ratio Your result for this lab test is in the OPTIMAL range. The A/G Ratio compares the level of Albumin to the level of Globulin. Factors that affect Albumin and Globulin will then affect the A/G Ratio. An A/G Ratio in the Clinical High or Clinical Low ranges will create a much greater concern for a developing or ongoing disease process within the body.	Special Instructions at Optimal:
Lab Test Explanation for A/G Ratio at Functional Low: A/G Ratio Your result for this lab test is in the FUNCTIONAL LOW range. The A/G Ratio compares the level of Albumin to the level of Globulin. Factors that affect Albumin and Globulin will then affect the A/G Ratio. An A/G Ratio in the Clinical High or Clinical Low ranges will create a much greater concern for a developing or ongoing disease process within the body. When the A/G Ratio is in the Functional Low range we must first consider some type of infection or inflammation. Other factors that can contribute to a low A/G ratio include: 1) a liver problem, 2) a kidney problem, or 3) some type of developing disease or pathology within the body.	Special Instructions at Functional Low:
Lab Test Explanation for A/G Ratio at Clinical Low: A/G Ratio Your result for this lab test is in the CLINICAL LOW range. The A/G Ratio compares the level of Albumin to the level of Globulin. Factors that affect Albumin and Globulin will then affect the A/G Ratio. An A/G Ratio in the Clinical High or Clinical Low ranges will create a much greater concern for a developing or ongoing disease process within the body. When the A/G Ratio is in the Clinical Low range we must first consider some type of infection or inflammation. Other factors that can contribute to a low A/G ratio include: 1) a liver problem, 2) a kidney problem, or 3) some type of developing disease or pathology within the body.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Bilirubin, Total, Serum	Clinical High	1.3 or higher								
	Functional High	NA								
	Optimal	0.0 - 1.2								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Total Bilirubin, Serum at Clinical High:	Special Instructions at Clinical High:
Total Bilirubin, Serum Your result for this lab test is in the CLINICAL HIGH range. Bilirubin is found in the blood as a result of Hemoglobin breakdown. Hemoglobin is part of your Red Blood Cells and has the important job of transporting oxygen to all the cells of your body. Bilirubin is found in the blood in two forms. One form is on its way to the liver to be processed so the body can remove it (also called Indirect or Unconjugated Bilirubin), and the other form has completed processing in the liver (also called Direct or Conjugated Bilirubin) and is on its way out of the body within the bile that is created by the liver and stored in the gall bladder. This makes Bilirubin a good indicator if there is a problem or blockage within the liver or gall bladder. When Total Bilirubin is in the Clinical High range it means that either Red Blood Cells are breaking down or being destroyed more rapidly than normal somewhere in the body, or there is a problem in the liver or gallbladder that is preventing the body from removing this as effectively. With high Total Bilirubin it may be helpful to do additional testing for the amount of Direct and Indirect Bilirubin to determine if the problem is before it gets to the liver, or if a problem is within the liver / gall bladder. A more complete list of what can cause a high Total Bilirubin includes: 1) a genetic disorder called Gilbert's Syndrome that interferes how the liver will metabolize Bilirubin, 2) a liver problem, 3) a problem or blockage of the gall bladder, 4) a condition that results in a more rapid breakdown or destruction of Red Blood Cells and Hemoglobin - such as hemolytic anemia, and 5) a problem affecting the spleen or thymus gland.	
Lab Test Explanation for Total Bilirubin, Serum at Functional High: Total Bilirubin, Serum NA	Special Instructions at Functional High:
Lab Test Explanation for Total Bilirubin, Serum at Optimal: Total Bilirubin, Serum Your result for this lab test is in the OPTIMAL range. Bilirubin is found in the blood as a result of Hemoglobin breakdown. Hemoglobin is part of your Red Blood Cells and has the important job of transporting oxygen to all the cells of your body. Bilirubin is found in the blood in two forms. One form is on its way to the liver to be processed so the body can remove it (also called Indirect or Unconjugated Bilirubin), and the other form has completed processing in the liver (also called Direct	Special Instructions at Optimal:

or Conjugated Bilirubin) and is on its way out of the body within the bile that is created by the liver and stored in the gall bladder. This makes Bilirubin a good indicator if there is a problem or blockage within the liver or gall bladder.	
Lab Test Explanation for Total Bilirubin, Serum at Functional Low: Total Bilirubin, Serum NA	Special Instructions at Functional Low:
Lab Test Explanation for Total Bilirubin, Serum at Clinical Low: Total Bilirubin, Serum NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Alkaline Phosphatase	Clinical High	118 or higher								
	Functional High	91 - 117								
	Optimal	60 - 90								
	Functional Low	39 - 59								
	Clinical Low	0 - 38								

Lab Test Explanation for Alkaline Phosphatase at Clinical High: Alkaline Phosphatase Your result for this lab test is in the CLINICAL HIGH range. Alkaline Phosphatase is a group of enzymes that originate from several tissues in the body to include: bone, liver, intestines and placenta. The highest concentrations are found within the bone and liver. Therefore it can be used as an indicator of a problem with these areas when Alkaline Phosphatase is higher than optimal. It is common to see Alkaline Phosphatase elevated in bone fractures that are healing and in teens when their bones are growing . . . this is considered normal due to the increase in bone activity. When Alkaline Phosphatase is in the Clinical High range it creates the greatest concern for abnormal cell activity or some type of disease process. It may be useful to do additional testing for the specific type of tissue enzyme - called an isoenzyme test - to determine the type of tissue affected for a better diagnosis. Factors that can contribute to a high Alkaline Phosphatase include: 1) Liver or gall bladder problem, 2) some type of disorder affecting bone tissue, 3) a	Special Instructions at Clinical High:

digestive problem, 4) overactive or hyper-thyroid function, 5) overactive or hyper-adrenal function, 6) taking too much Vitamin D, and 7) a possible need for more Vitamin C.	
Lab Test Explanation for Alkaline Phosphatase at Functional High: Alkaline Phosphatase Your result for this lab test is in the FUNCTIONAL HIGH range. Alkaline Phosphatase is a group of enzymes that originate from several tissues in the body to include: bone, liver, intestines and placenta. The highest concentrations are found within the bone and liver. Therefore it can be used as an indicator of a problem with these areas when Alkaline Phosphatase is higher than optimal. It is common to see Alkaline Phosphatase elevated in bone fractures that are healing and in teens when their bones are growing . . . this is considered normal due to the increase in bone activity. When Alkaline Phosphatase is in the Functional High range we must first consider if there is a problem affect the liver or gall bladder and compare this with other liver testing results. Other factors that can contribute to a high Alkaline Phosphatase include: 1) some type of disorder affecting bone tissue, 2) a digestive problem, 3) overactive or hyper-thyroid function, 4) overactive or hyper-adrenal function, 5) taking too much Vitamin D, and 6) a possible need for more Vitamin C.	Special Instructions at Functional High:
Lab Test Explanation for Alkaline Phosphatase at Optimal: Alkaline Phosphatase Your result for this lab test is in the OPTIMAL range. Alkaline Phosphatase is a group of enzymes that originate from several tissues in the body to include: bone, liver, intestines and placenta. The highest concentrations are found within the bone and liver. Therefore it can be used as an indicator of a problem with these areas when Alkaline Phosphatase is higher than optimal. It is common to see Alkaline Phosphatase elevated in bone fractures that are healing and in teens when their bones are growing . . . this is considered normal due to the increase in bone activity.	Special Instructions at Optimal:
Lab Test Explanation for Alkaline Phosphatase at Functional Low: Alkaline Phosphatase Your result for this lab test is in the FUNCTIONAL LOW range. Alkaline Phosphatase is a group of enzymes that originate from several tissues in the body to include: bone, liver, intestines and placenta. The highest concentrations are found within the bone and liver. Therefore it can be used as an indicator of a problem with these areas when Alkaline Phosphatase is higher than optimal. It is common to see Alkaline Phosphatase elevated in bone fractures that are healing and in teens when their bones are growing . . . this is considered normal due to the increase in bone activity. When Alkaline Phosphatase is in the Functional Low range we must first consider if there is a possible zinc deficiency within the body. The Alkaline Phosphatase enzyme is zinc-dependent … meaning it requires enough zinc in the body in order for the enzyme to be created … so a low result for this lab test can be a good indicator of a zinc deficiency. Other factors that can contribute to a low Alkaline Phosphatase include: 1) underactive or hypo-thyroid function, 2) underactive or hypo-	Special Instructions at Functional Low:

adrenal function, 3) estrogen intake, and 4) some type of anemia.	
Lab Test Explanation for Alkaline Phosphatase at Clinical Low: Alkaline Phosphatase Your result for this lab test is in the CLINICAL LOW range. Alkaline Phosphatase is a group of enzymes that originate from several tissues in the body to include: bone, liver, intestines and placenta. The highest concentrations are found within the bone and liver. Therefore it can be used as an indicator of a problem with these areas when Alkaline Phosphatase is higher than optimal. It is common to see Alkaline Phosphatase elevated in bone fractures that are healing and in teens when their bones are growing . . . this is considered normal due to the increase in bone activity. When Alkaline Phosphatase is in the Clinical Low range we must first consider if there is a possible zinc deficiency within the body. The Alkaline Phosphatase enzyme is zinc-dependent … meaning it requires enough zinc in the body in order for the enzyme to be created … so a low result for this lab test can be a good indicator of a zinc deficiency. Other factors that can contribute to a low Alkaline Phosphatase include: 1) underactive or hypo-thyroid function, 2) underactive or hypo-adrenal function, 3) estrogen intake, and 4) some type of anemia.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
LDH	Clinical High	215 or higher								
	Functional High	181 - 214								
	Optimal	120 - 180								
	Functional Low	0 - 119								
	Clinical Low	NA								

Lab Test Explanation for LDH at Clinical High: LDH Your result for this lab test is in the CLINICAL HIGH range. LDH refers to an enzyme called Lactate Dehydrogenase which is found in nearly all cells of the body with only a small amount normally found in the blood. LDH gets released into the blood when cells are damaged or destroyed. This makes LDH a good general indicator of damage to cells and tissues within the body. Measuring the total amount of LDH is actually a measurement of 5 fractions of this enzyme combined together - called isoenzymes.	Special Instructions at Clinical High:

When the total LDH is in the Clinical High range you should first consider doing the LDH isoenzyme testing to measure each of these 5 fractions of LDH to help narrow down the organ or tissue affect by cell damage, and then compare this with the other lab testing results to arrive at a more accurate diagnosis.	
Lab Test Explanation for LDH at Functional High: LDH Your result for this lab test is in the FUNCTIONAL HIGH range. LDH refers to an enzyme called Lactate Dehydrogenase which is found in nearly all cells of the body with only a small amount normally found in the blood. LDH gets released into the blood when cells are damaged or destroyed. This makes LDH a good general indicator of damage to cells and tissues within the body. Measuring the total amount of LDH is actually a measurement of 5 fractions of this enzyme combined together - called isoenzymes. When the total LDH is in the Functional High range you would normally NOT do any testing of these 5 fractions - called an LDH isoenzyme testing - because this would only be a valid test when the total LDH is in the Clinical High range. Instead you would conclude that there is a mild amount of cell damage taking place within the body, and you will need to compare this result with other lab results to identify the area of the body affected or if this is due to inflammation within the body.	Special Instructions at Functional High:
Lab Test Explanation for LDH at Optimal: LDH Your result for this lab test is in the OPTIMAL range. LDH refers to an enzyme called Lactate Dehydrogenase which is found in nearly all cells of the body with only a small amount normally found in the blood. LDH gets released into the blood when cells are damaged or destroyed. This makes LDH a good general indicator of damage to cells and tissues within the body. Measuring the total amount of LDH is actually a measurement of 5 fractions of this enzyme combined together - called isoenzymes.	Special Instructions at Optimal:
Lab Test Explanation for LDH at Functional Low: LDH Your result for this lab test is in the FUNCTIONAL LOW range. LDH refers to an enzyme called Lactate Dehydrogenase which is found in nearly all cells of the body with only a small amount normally found in the blood. LDH gets released into the blood when cells are damaged or destroyed. This makes LDH a good general indicator of damage to cells and tissues within the body. Measuring the total amount of LDH is actually a measurement of 5 fractions of this enzyme combined together - called isoenzymes. When the LDH is in the Functional Low range we must first consider if there is a problem with controlling blood sugar levels. This result should be compared with Serum Glucose and Hemoglobin A1c to determine the presence of hypoglycemia (low blood sugar).	Special Instructions at Functional Low:

Lab Test Explanation for LDH at Clinical Low:	Special Instructions at Clinical Low:
LDH NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
AST (SGOT)	Clinical High	41 or higher								
	Functional High	31 - 40								
	Optimal	15 - 30								
	Functional Low	0 - 14								
	Clinical Low	NA								

Lab Test Explanation for AST (SGOT) at Clinical High:	Special Instructions at Clinical High:
AST (SGOT) Your result for this lab test is in the CLINICAL HIGH range. AST refers to an enzyme called Aspartate Aminotransferase, and this test is commonly called a liver enzyme test. In reality AST is found in many organs and tissues of the body that are considered to be highly metabolic, or simply more active on a daily basis to include: liver, skeletal muscles, heart muscle, brain, kidney, pancreas and lungs . . . but this enzyme is found in the greatest quantity within the liver and heart. AST is an enzyme that will show up in the blood when there is damage or destruction of cells in these more metabolically active tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the AST begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When AST is in the Clinical High range we first think of a problem affecting the liver. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. When	

these liver enzymes (AST, ALT, and GGT) begin testing at or near 100 we begin to think about some type of Fatty Liver Disease. When these are testing at or over 200 we become more concerned about Hepatitis. Elevated levels of AST may require additional testing or referral to a specialist to determine the origin of liver stress. Other reasons that may result in a high AST include: 1) some type of heart problem or coronary artery problem, 2) a gall bladder problem, 3) a pancreas problem, 4) a condition resulting in muscle tissue breakdown, 5) some types of anemia or 6) a recent viral infection. If AST is elevated much higher than ALT we then begin to think more about some type of heart or skeletal muscle problem.	
Lab Test Explanation for AST (SGOT) at Functional High: AST (SGOT) Your result for this lab test is in the FUNCTIONAL HIGH range. AST refers to an enzyme called Aspartate Aminotransferase, and this test is commonly called a liver enzyme test. In reality AST is found in many organs and tissues of the body that are considered to be highly metabolic, or simply more active on a daily basis to include: liver, skeletal muscles, heart muscle, brain, kidney, pancreas and lungs . . . but this enzyme is found in the greatest quantity within the liver and heart. AST is an enzyme that will show up in the blood when there is damage or destruction of cells in these more metabolically active tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the AST begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When AST is in the Functional High range we first think of a problem affecting the liver. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. Other reasons that may result in a high AST include: 1) some type of heart problem or coronary artery problem, 2) a gall bladder problem, 3) a pancreas problem, 4) a condition resulting in muscle tissue breakdown, 5) some types of anemia or 6) a recent viral infection.	Special Instructions at Functional High:
Lab Test Explanation for AST (SGOT) at Optimal: AST (SGOT) Your result for this lab test is in the OPTIMAL range. AST refers to an enzyme called Aspartate Aminotransferase, and this test is commonly called a liver enzyme test. In reality AST is found in many organs and tissues of the body that are considered to be highly metabolic, or simply more active on a daily basis to include: liver, skeletal muscles, heart muscle, brain, kidney, pancreas and lungs . . . but this enzyme is found in the greatest quantity within the liver and heart. AST is an enzyme that will show up in the blood when there is damage or destruction of cells in these more metabolically active	Special Instructions at Optimal:

tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the AST begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues.	
Lab Test Explanation for AST (SGOT) at Functional Low: AST (SGOT) Your result for this lab test is in the FUNCTIONAL LOW range. AST refers to an enzyme called Aspartate Aminotransferase, and this test is commonly called a liver enzyme test. In reality AST is found in many organs and tissues of the body that are considered to be highly metabolic, or simply more active on a daily basis to include: liver, skeletal muscles, heart muscle, brain, kidney, pancreas and lungs . . . but this enzyme is found in the greatest quantity within the liver and heart. AST is an enzyme that will show up in the blood when there is damage or destruction of cells in these more metabolically active tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the AST begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When AST is in the Functional Low range it is likely telling us that there is an underactive or hypo-liver function and/or a deficiency of certain B vitamins. Specifically Vitamin B6 is needed by the liver in order to create the AST liver enzyme, so a low AST can indicate a need for more Vitamin B6.	Special Instructions at Functional Low:
Lab Test Explanation for AST (SGOT) at Clinical Low: AST (SGOT) NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
ALT (SGPT)	Clinical High	56 or higher								
	Functional High	31 - 55								
	Optimal	15 - 30								
	Functional Low	0 - 14								
	Clinical Low	NA								

Lab Test Explanation for ALT (SGPT) at Clinical High:
ALT (SGPT)

Your result for this lab test is in the CLINICAL HIGH range. ALT refers to an enzyme called Alanine Aminotransferase, and this test is commonly called a liver enzyme test. In reality ALT is found in several organs and tissues to include: liver, skeletal muscles, heart muscle, and kidney . . . but this enzyme is found in the greatest quantity within the liver. ALT is an enzyme that will show up in the blood when there is damage or destruction of cells in these tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing.

Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the ALT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues.

When ALT is in the Clinical High range we first think of a problem affecting the liver. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. When these liver enzymes (AST, ALT and GGT) begin testing at or near 100 we begin to think about some type of Fatty Liver Disease. When these are testing at or over 200 we become more concerned about Hepatitis. Elevated levels of ALT may require additional testing or referral to a specialist to determine the origin of liver stress. Other reasons that may result in a high ALT include: 1) a gall bladder problem, or 2) a condition resulting in muscle tissue breakdown. Because ALT is more specific to the liver than AST . . . we will feel more confident that a problem exists within the liver when ALT is elevated.

Special Instructions at Clinical High:

Lab Test Explanation for ALT (SGPT) at Functional High:
ALT (SGPT)

Your result for this lab test is in the FUNCTIONAL HIGH range. ALT refers to an enzyme called Alanine Aminotransferase,

Special Instructions at Functional High:

and this test is commonly called a liver enzyme test. In reality ALT is found in several organs and tissues to include: liver, skeletal muscles, heart muscle, and kidney . . . but this enzyme is found in the greatest quantity within the liver. ALT is an enzyme that will show up in the blood when there is damage or destruction of cells in these tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the ALT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When ALT is in the Functional High range we first think of a problem affecting the liver. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. Other reasons that may result in a high ALT include: 1) a gall bladder problem, or 2) a condition resulting in muscle tissue breakdown. Because ALT is more specific to the liver than AST . . . we will feel more confident that a problem exists within the liver when ALT is elevated.	
Lab Test Explanation for ALT (SGPT) at Optimal: ALT (SGPT) Your result for this lab test is in the OPTIMAL range. ALT refers to an enzyme called Alanine Aminotransferase, and this test is commonly called a liver enzyme test. In reality ALT is found in several organs and tissues to include: liver, skeletal muscles, heart muscle, and kidney . . . but this enzyme is found in the greatest quantity within the liver. ALT is an enzyme that will show up in the blood when there is damage or destruction of cells in these tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the ALT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues.	Special Instructions at Optimal:

Lab Test Explanation for ALT (SGPT) at Functional Low: ALT (SGPT) Your result for this lab test is in the FUNCTIONAL LOW range. ALT refers to an enzyme called Alanine Aminotransferase, and this test is commonly called a liver enzyme test. In reality ALT is found in several organs and tissues to include: liver, skeletal muscles, heart muscle, and kidney . . . but this enzyme is found in the greatest quantity within the liver. ALT is an enzyme that will show up in the blood when there is damage or destruction of cells in these tissues. You may know of someone who needed to periodically get their "liver checked" while begin on a medication - such as a cholesterol medication. They were most likely getting these two main liver enzymes tested (AST and ALT) as a common screening test for liver function in blood testing. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the ALT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When ALT is in the Functional Low range it is likely telling us that there is an underactive or hypo-liver function and/or a deficiency of certain B vitamins. Specifically Vitamin B6 is needed by the liver in order to create the ALT liver enzyme, so a low ALT can indicate a need for more Vitamin B6.	Special Instructions at Functional Low:
Lab Test Explanation for ALT (SGPT) at Clinical Low: ALT (SGPT) NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
GGT	Clinical High	61 or higher								
	Functional High	31 - 60								
	Optimal	15 - 30								
	Functional Low	0 - 14								
	Clinical Low	NA								

Lab Test Explanation for GGT at Clinical High:
GGT

Your result for this lab test is in the CLINICAL HIGH range. GGT refers to an enzyme called Gamma Glutamyl Transferase (sometimes abbreviated as GGTP), and this is an enzyme test most commonly associated with damage to the liver or obstruction of the bile ducts outside the liver. In reality GGT is found in several organs and tissues to include: liver, the biliary tract (which carries bile from the liver to the small intestine), your kidneys, pancreas and prostate . . . but this enzyme is found in the greatest quantity within the liver. GGT is usually the first enzyme to elevate when the bile ducts become obstructed, and this makes it the most sensitive of the different liver enzyme tests to detect bile duct problems.

Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the GGT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues.

When GGT is in the Clinical High range we first think of a problem affecting the liver, or some type of obstruction of the biliary tract. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. When these liver enzymes (AST, ALT and GGT) begin testing at or near 100 we begin to think about some type of Fatty Liver Disease. When these are testing at or over 200 we become more concerned about Hepatitis. Elevated levels of GGT may require additional testing or referral to a specialist to determine the origin of liver stress. Other reasons that may result in a high GGT include: 1) a gall bladder problem, 2) a problem with the pancreas, 3) diabetes, 4) overactive or hyper-thyroid function, 5) a problem with the heart or cardiovascular system. It should be noted that GGT can be falsely elevated if alcohol was consumed within 24 hours of collecting the blood sample.

Special Instructions at Clinical High:

Lab Test Explanation for GGT at Functional High:
GGT

Your result for this lab test is in the FUNCTIONAL HIGH range. GGT refers to an enzyme called Gamma Glutamyl

Special Instructions at Functional High:

Transferase (sometimes abbreviated as GGTP), and this is an enzyme test most commonly associated with damage to the liver or obstruction of the bile ducts outside the liver. In reality GGT is found in several organs and tissues to include: liver, the biliary tract (which carries bile from the liver to the small intestine), your kidneys, pancreas and prostate . . . but this enzyme is found in the greatest quantity within the liver. GGT is usually the first enzyme to elevate when the bile ducts become obstructed, and this makes it the most sensitive of the different liver enzyme tests to detect bile duct problems. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the GGT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When GGT is in the Functional High range we first think of a problem affecting the liver, or some type of obstruction of the biliary tract. The stress on the liver could be due to some type of infection or inflammation, a medication or other chemical stress, alcohol intake, or other reasons. Other reasons that may result in a high GGT include: 1) a gall bladder problem, 2) a problem with the pancreas, 3) diabetes, 4) overactive or hyper-thyroid function, 5) a problem with the heart or cardiovascular system. It should be noted that GGT can be falsely elevated if alcohol was consumed within 24 hours of collecting the blood sample.	
Lab Test Explanation for GGT at Optimal: GGT Your result for this lab test is in the OPTIMAL range. GGT refers to an enzyme called Gamma Glutamyl Transferase (sometimes abbreviated as GGTP), and this is an enzyme test most commonly associated with damage to the liver or obstruction of the bile ducts outside the liver. In reality GGT is found in several organs and tissues to include: liver, the biliary tract (which carries bile from the liver to the small intestine), your kidneys, pancreas and prostate . . . but this enzyme is found in the greatest quantity within the liver. GGT is usually the first enzyme to elevate when the bile ducts become obstructed, and this makes it the most sensitive of the different liver enzyme tests to detect bile duct problems. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the GGT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues.	Special Instructions at Optimal:

Lab Test Explanation for GGT at Functional Low: GGT Your result for this lab test is in the FUNCTIONAL LOW range. GGT refers to an enzyme called Gamma Glutamyl Transferase (sometimes abbreviated as GGTP), and this is an enzyme test most commonly associated with damage to the liver or obstruction of the bile ducts outside the liver. In reality GGT is found in several organs and tissues to include: liver, the biliary tract (which carries bile from the liver to the small intestine), your kidneys, pancreas and prostate . . . but this enzyme is found in the greatest quantity within the liver. GGT is usually the first enzyme to elevate when the bile ducts become obstructed, and this makes it the most sensitive of the different liver enzyme tests to detect bile duct problems. Your liver has many important functions in the body including: removing chemicals and toxins from the body, it's involved in blood sugar control, it activates the majority of thyroid hormone into its more bioactive form (T3) to improve energy and metabolism, and much more. Your liver is a very resilient organ, as you can have as little as 20% of good liver function and still have these liver enzymes test in the normal range. This means that when the GGT begins to test outside the optimal range we want to take action more quickly to help improve function before any more damage happens to the liver or other affected tissues. When GGT is in the Functional Low range it is likely telling us that there is an underactive or hypo-liver function and/or a deficiency of certain B vitamins. Specifically Vitamin B6 is needed by the liver in order to create the GGT liver enzyme, so a low GGT can indicate a need for more Vitamin B6. Other reasons that can contribute to a low GGT include: 1) a magnesium deficiency, and the body's need for more magnesium, and 2) underactive or hypo-thyroid function.	Special Instructions at Functional Low:
Lab Test Explanation for GGT at Clinical Low: GGT NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Iron Bind. Cap. (TIBC)	Clinical High	451 or higher								
	Functional High	351 - 450								
	Optimal	250 - 350								
	Functional Low	NA								
	Clinical Low	0 - 249								

Lab Test Explanation for Iron Bind. Cap. (TIBC) at Clinical High:	Special Instructions at Clinical High:
Iron Bind. Cap. (TIBC) Your result for this lab test is in the CLINICAL HIGH range. Iron Binding Capacity (sometimes referred to as Total Iron Binding Capacity or TIBC) is a lab test to measure how much iron can bind to a protein that is responsible for transporting iron throughout the body (the protein is called transferrin). To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then there is a higher capacity or ability for more iron to bind and the Iron Binding Capacity will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is already bound to iron . . . then there is a lower capacity or ability to bind more iron and the Iron Binding Capacity will measure at a lower level. This would indicate that there may be too much iron in the body. The measurement for Iron Binding Capacity will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the Iron Binding Capacity will go higher. If iron levels in the body are high, then Iron Binding Capacity will go lower. When Iron Binding Capacity is in the Clinical High range it will indicate that there may be too little iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron deficiency and the body is in need of more iron.	

Lab Test Explanation for Iron Bind. Cap. (TIBC) at Functional High:	Special Instructions at Functional High:
Iron Bind. Cap. (TIBC) Your result for this lab test is in the FUNCTIONAL HIGH range. Iron Binding Capacity (sometimes referred to as Total Iron Binding Capacity or TIBC) is a lab test to measure how much iron can bind to a protein that is responsible for transporting iron throughout the body (the protein is called transferrin). To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then there is a higher capacity or ability for more iron to bind and the Iron Binding Capacity will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is already bound to iron . . . then there is a lower capacity or ability to bind more iron and the Iron Binding Capacity will measure at a lower level. This would indicate that there may be too much iron in the body. The measurement for Iron Binding Capacity will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the Iron Binding Capacity will go higher. If iron levels in the body are high, then Iron Binding	

Capacity will go lower. When Iron Binding Capacity is in the Functional High range it will indicate that there may be too little iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron deficiency and the body is in need of more iron.	
Lab Test Explanation for Iron Bind. Cap. (TIBC) at Optimal: Iron Bind. Cap. (TIBC) Your result for this lab test is in the OPTIMAL range. Iron Binding Capacity (sometimes referred to as Total Iron Binding Capacity or TIBC) is a lab test to measure how much iron can bind to a protein that is responsible for transporting iron throughout the body (the protein is called transferrin). To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then there is a higher capacity or ability for more iron to bind and the Iron Binding Capacity will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is already bound to iron . . . then there is a lower capacity or ability to bind more iron and the Iron Binding Capacity will measure at a lower level. This would indicate that there may be too much iron in the body. The measurement for Iron Binding Capacity will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the Iron Binding Capacity will go higher. If iron levels in the body are high, then Iron Binding Capacity will go lower.	Special Instructions at Optimal:
Lab Test Explanation for Iron Bind. Cap. (TIBC) at Functional Low: Iron Bind. Cap. (TIBC) NA	Special Instructions at Functional Low:
Lab Test Explanation for Iron Bind. Cap. (TIBC) at Clinical Low: Iron Bind. Cap. (TIBC) Your result for this lab test is in the CLINICAL LOW range. Iron Binding Capacity (sometimes referred to as Total Iron Binding Capacity or TIBC) is a lab test to measure how much iron can bind to a protein that is responsible for transporting iron throughout the body (the protein is called transferrin). To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then there is a higher capacity or ability for more iron to bind and the Iron Binding Capacity will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is already bound to iron . . . then there is a lower capacity or ability to bind more iron and the Iron Binding Capacity will measure at a lower level. This would indicate that there may be too much iron in the body. The measurement for Iron Binding Capacity will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the Iron Binding Capacity will go higher. If iron levels in the body are high, then Iron Binding Capacity will go lower. When Iron Binding Capacity is in the Clinical Low range it will indicate that there may be too much iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron excess in the body.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
UIBC	Clinical High	376 or higher								
	Functional High	301 - 375								
	Optimal	200 - 300								
	Functional Low	150 - 199								
	Clinical Low	0 - 149								

Lab Test Explanation for UIBC at Clinical High:
UIBC

Your result for this lab test is in the CLINICAL HIGH range. UIBC refers to the Unsaturated Iron Binding Capacity, and this lab test measures the portion of the transport protein for iron (called transferrin) that has not been saturated with iron. It is essentially a duplicate measurement of Iron Binding Capacity or TIBC, and tells us the same information in a different format. To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the UIBC (the unsaturated portion) will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is highly saturated with iron . . . then the UIBC (the unsaturated portion) will be at a much lower level. This would indicate that there may be too much iron in the body. The measurement for UIBC will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the UIBC will go higher. If iron levels in the body are high, then the UIBC will go lower.

When UIBC is in the Clinical High range it will indicate that there may be too little iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron deficiency and the body is in need of more iron.

Special Instructions at Clinical High:

Lab Test Explanation for UIBC at Functional High:
UIBC

Your result for this lab test is in the FUNCTIONAL HIGH range. UIBC refers to the Unsaturated Iron Binding Capacity, and this lab test measures the portion of the transport protein for iron (called transferrin) that has not been saturated with iron. It is essentially a duplicate measurement of Iron Binding Capacity or TIBC, and tells us the same information in a different format. To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the UIBC (the unsaturated portion) will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is highly saturated with iron . . . then the UIBC (the unsaturated portion) will be at a much lower level. This would indicate that there may be too much iron in the body. The measurement for UIBC will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the UIBC will go higher. If iron levels in the body are high, then the UIBC will go lower.

Special Instructions at Functional High:

When UIBC is in the Functional High range it will indicate that there may be too little iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron deficiency and the body is in need of more iron.	
Lab Test Explanation for UIBC at Optimal: UIBC Your result for this lab test is in the OPTIMAL range. UIBC refers to the Unsaturated Iron Binding Capacity, and this lab test measures the portion of the transport protein for iron (called transferrin) that has not been saturated with iron. It is essentially a duplicate measurement of Iron Binding Capacity or TIBC, and tells us the same information in a different format. To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the UIBC (the unsaturated portion) will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is highly saturated with iron . . . then the UIBC (the unsaturated portion) will be at a much lower level. This would indicate that there may be too much iron in the body. The measurement for UIBC will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the UIBC will go higher. If iron levels in the body are high, then the UIBC will go lower.	Special Instructions at Optimal:
Lab Test Explanation for UIBC at Functional Low: UIBC Your result for this lab test is in the FUNCTIONAL LOW range. UIBC refers to the Unsaturated Iron Binding Capacity, and this lab test measures the portion of the transport protein for iron (called transferrin) that has not been saturated with iron. It is essentially a duplicate measurement of Iron Binding Capacity or TIBC, and tells us the same information in a different format. To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the UIBC (the unsaturated portion) will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is highly saturated with iron . . . then the UIBC (the unsaturated portion) will be at a much lower level. This would indicate that there may be too much iron in the body. The measurement for UIBC will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the UIBC will go higher. If iron levels in the body are high, then the UIBC will go lower. When UIBC is in the Functional Low range it will indicate that there may be too much iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron excess in the body.	Special Instructions at Functional Low:
Lab Test Explanation for UIBC at Clinical Low: UIBC Your result for this lab test is in the CLINICAL LOW range. UIBC refers to the Unsaturated Iron Binding Capacity, and this lab test measures the portion of the transport protein for iron (called transferrin) that has not been saturated with iron. It is essentially a duplicate measurement of Iron Binding Capacity or TIBC, and tells us the same information in a different	Special Instructions at Clinical Low:

format. To state this more simply . . . if there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the UIBC (the unsaturated portion) will measure at a higher level. This would indicate that there may not be enough iron in the body. Conversely, if most of this transport protein is highly saturated with iron . . . then the UIBC (the unsaturated portion) will be at a much lower level. This would indicate that there may be too much iron in the body. The measurement for UIBC will usually travel opposite of iron levels in the body. If iron levels in the body are low, then the UIBC will go higher. If iron levels in the body are high, then the UIBC will go lower. When UIBC is in the Clinical Low range it will indicate that there may be too much iron in the body, and we will compare this reading with other lab tests for iron levels to confirm if there is indeed an iron excess in the body.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Iron, Serum	Clinical High	156 or higher								
	Functional High	126 - 155								
	Optimal	80 - 125								
	Functional Low	35 - 79								
	Clinical Low	0 - 34								

Lab Test Explanation for Iron, Serum at Clinical High:

Iron, Serum

Your result for this lab test is in the CLINICAL HIGH range. Serum Iron is the most basic measure of iron status in your body, and like the name implies it measures the amount of iron that is currently available in your blood. Iron is transported in your blood with the help of a carrier protein called Transferrin. Serum Iron is specifically measuring the amount of Iron circulating in your blood while it is bound to Transferrin.

Iron is absorbed into the body from the foods we eat, and requires good digestion. The carrier protein - called Transferrin - is produced by the Liver, so good iron levels can depend on good liver function. Iron is also an important component of Hemoglobin which is found in your Red Blood Cells, and Hemoglobin has the important job of transporting oxygen to all the cells of your body to keep your cells healthy and functioning their best. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remainder is found in tissues in its storage form called Ferritin.

When Serum Iron is in the Clinical High range we must first determine if there is truly an overload or excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1)

Special Instructions at Clinical High:

excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) a hereditary condition called Hemochromatosis, 4) an inflammatory process within the body, or 5) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.	
Lab Test Explanation for Iron, Serum at Functional High: Iron, Serum Your result for this lab test is in the FUNCTIONAL HIGH range. Serum Iron is the most basic measure of iron status in your body, and like the name implies it measures the amount of iron that is currently available in your blood. Iron is transported in your blood with the help of a carrier protein called Transferrin. Serum Iron is specifically measuring the amount of Iron circulating in your blood while it is bound to Transferrin. Iron is absorbed into the body from the foods we eat, and requires good digestion. The carrier protein - called Transferrin - is produced by the Liver, so good iron levels can depend on good liver function. Iron is also an important component of Hemoglobin which is found in your Red Blood Cells, and Hemoglobin has the important job of transporting oxygen to all the cells of your body to keep your cells healthy and functioning their best. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remainder is found in tissues in its storage form called Ferritin. When Serum Iron is in the Functional High range we must first determine if there is truly an excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1) excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) an inflammatory process within the body, or 4) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.	Special Instructions at Functional High:
Lab Test Explanation for Iron, Serum at Optimal: Iron, Serum Your result for this lab test is in the OPTIMAL range. Serum Iron is the most basic measure of iron status in your body, and like the name implies it measures the amount of iron that is currently available in your blood. Iron is transported in your blood with the help of a carrier protein called Transferrin. Serum Iron is specifically measuring the amount of Iron circulating in your blood while it is bound to Transferrin. Iron is absorbed into the body from the foods we eat, and requires good digestion. The carrier protein - called Transferrin - is produced by the Liver, so good iron levels can depend on good liver function. Iron is also an important component of Hemoglobin which is found in your Red Blood Cells, and Hemoglobin has the important job of transporting oxygen to all the cells of your body to keep your cells healthy and functioning their best. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remainder is found in tissues in its storage form called Ferritin.	Special Instructions at Optimal:

Lab Test Explanation for Iron, Serum at Functional Low: Iron, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Serum Iron is the most basic measure of iron status in your body, and like the name implies it measures the amount of iron that is currently available in your blood. Iron is transported in your blood with the help of a carrier protein called Transferrin. Serum Iron is specifically measuring the amount of Iron circulating in your blood while it is bound to Transferrin. Iron is absorbed into the body from the foods we eat, and requires good digestion. The carrier protein - called Transferrin - is produced by the Liver, so good iron levels can depend on good liver function. Iron is also an important component of Hemoglobin which is found in your Red Blood Cells, and Hemoglobin has the important job of transporting oxygen to all the cells of your body to keep your cells healthy and functioning their best. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remainder is found in tissues in its storage form called Ferritin. When Serum Iron is in the Functional Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	Special Instructions at Functional Low:
Lab Test Explanation for Iron, Serum at Clinical Low: Iron, Serum Your result for this lab test is in the CLINICAL LOW range. Serum Iron is the most basic measure of iron status in your body, and like the name implies it measures the amount of iron that is currently available in your blood. Iron is transported in your blood with the help of a carrier protein called Transferrin. Serum Iron is specifically measuring the amount of Iron circulating in your blood while it is bound to Transferrin. Iron is absorbed into the body from the foods we eat, and requires good digestion. The carrier protein - called Transferrin - is produced by the Liver, so good iron levels can depend on good liver function. Iron is also an important component of Hemoglobin which is found in your Red Blood Cells, and Hemoglobin has the important job of transporting oxygen to all the cells of your body to keep your cells healthy and functioning their best. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remainder is found in tissues in its storage form called Ferritin. When Serum Iron is in the Clinical Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Iron Saturation	Clinical High	56 or higher								
	Functional High	41 - 55								
	Optimal	20 - 40								
	Functional Low	15 - 19								
	Clinical Low	0 - 14								

Lab Test Explanation for Iron Saturation at Clinical High:
Iron Saturation

Your result for this lab test is in the CLINICAL HIGH range. Iron Saturation is a measure of how much Transferrin is saturated with iron, and this is measured as a percentage. Transferrin is a carrier protein that helps to transport iron throughout the body. In a healthy individual the Iron Saturation ranges from about 20% - 40% . . . with and average around 33%. If there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the Iron Saturation will be a lower percentage. This would indicate that there may not be enough iron in the body. Conversely, if this transport protein is highly saturated with iron . . . then the Iron Saturation will be at a higher percentage. This would indicate that there may be too much iron in the body. The measurement for Iron Saturation will usually travel in the same direction of iron levels in the body. If iron levels in the body are low, then the Iron Saturation will be a lower percentage. If iron levels in the body are high, then the Iron Saturation will be a higher percentage.

When Iron Saturation is in the Clinical High range we must first determine if there is truly an overload or excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1) excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) a hereditary condition called Hemochromatosis, 4) an inflammatory process within the body, or 5) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.

Special Instructions at Clinical High:

Lab Test Explanation for Iron Saturation at Functional High:
Iron Saturation

Your result for this lab test is in the FUNCTIONAL HIGH range. Iron Saturation is a measure of how much Transferrin is saturated with iron, and this is measured as a percentage. Transferrin is a carrier protein that helps to transport iron throughout the body. In a healthy individual the Iron Saturation ranges from about 20% - 40% . . . with and average around 33%. If there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the Iron Saturation will be a lower percentage. This would indicate that there may not be enough iron in the body. Conversely, if this transport protein is highly saturated with iron . . . then the Iron Saturation will be at a higher percentage. This would indicate that there may be too much iron in the body. The measurement for Iron Saturation will usually travel in the same direction of iron levels in the body. If iron levels in the body are low, then the Iron Saturation will

Special Instructions at Functional High:

be a lower percentage. If iron levels in the body are high, then the Iron Saturation will be a higher percentage. When Iron Saturation is in the Functional High range we must first determine if there is truly an excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1) excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) an inflammatory process within the body, or 4) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.	
Lab Test Explanation for Iron Saturation at Optimal: Iron Saturation Your result for this lab test is in the OPTIMAL range. Iron Saturation is a measure of how much Transferrin is saturated with iron, and this is measured as a percentage. Transferrin is a carrier protein that helps to transport iron throughout the body. In a healthy individual the Iron Saturation ranges from about 20% - 40% . . . with and average around 33%. If there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the Iron Saturation will be a lower percentage. This would indicate that there may not be enough iron in the body. Conversely, if this transport protein is highly saturated with iron . . . then the Iron Saturation will be at a higher percentage. This would indicate that there may be too much iron in the body. The measurement for Iron Saturation will usually travel in the same direction of iron levels in the body. If iron levels in the body are low, then the Iron Saturation will be a lower percentage. If iron levels in the body are high, then the Iron Saturation will be a higher percentage.	Special Instructions at Optimal:
Lab Test Explanation for Iron Saturation at Functional Low: Iron Saturation Your result for this lab test is in the FUNCTIONAL LOW range. Iron Saturation is a measure of how much Transferrin is saturated with iron, and this is measured as a percentage. Transferrin is a carrier protein that helps to transport iron throughout the body. In a healthy individual the Iron Saturation ranges from about 20% - 40% . . . with and average around 33%. If there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the Iron Saturation will be a lower percentage. This would indicate that there may not be enough iron in the body. Conversely, if this transport protein is highly saturated with iron . . . then the Iron Saturation will be at a higher percentage. This would indicate that there may be too much iron in the body. The measurement for Iron Saturation will usually travel in the same direction of iron levels in the body. If iron levels in the body are low, then the Iron Saturation will be a lower percentage. If iron levels in the body are high, then the Iron Saturation will be a higher percentage. When Iron Saturation is in the Functional Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	Special Instructions at Functional Low:

Lab Test Explanation for Iron Saturation at Clinical Low:	Special Instructions at Clinical Low:
Iron Saturation Your result for this lab test is in the CLINICAL LOW range. Iron Saturation is a measure of how much Transferrin is saturated with iron, and this is measured as a percentage. Transferrin is a carrier protein that helps to transport iron throughout the body. In a healthy individual the Iron Saturation ranges from about 20% - 40% . . . with and average around 33%. If there is not enough iron bound to this transport protein (called transferrin) then this protein is poorly saturated with iron and the Iron Saturation will be a lower percentage. This would indicate that there may not be enough iron in the body. Conversely, if this transport protein is highly saturated with iron . . . then the Iron Saturation will be at a higher percentage. This would indicate that there may be too much iron in the body. The measurement for Iron Saturation will usually travel in the same direction of iron levels in the body. If iron levels in the body are low, then the Iron Saturation will be a lower percentage. If iron levels in the body are high, then the Iron Saturation will be a higher percentage. When Iron Saturation is in the Clinical Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Ferritin, Serum	Clinical High	401 or higher								
	Functional High	251 - 400								
	Optimal	80 - 250								
	Functional Low	31 - 79								
	Clinical Low	0 - 30								

Lab Test Explanation for Ferritin, Serum at Clinical High:	Special Instructions at Clinical High:
Ferritin, Serum Your result for this lab test is in the CLINICAL HIGH range. Serum Ferritin is a measure of the storage form of iron. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remaining 30% is found in tissues in its storage form called Ferritin. Your body will store away reserves of iron in the form of Ferritin in case of injury or blood loss resulting in loss of iron in the blood. Your body will then draw upon this storage of iron (Ferritin) to try and	

bring iron levels in the blood back up to a healthy level. In the situation of an iron deficiency your body will first deplete your storage of iron (Ferritin) in an effort to keep Serum Iron at a healthy level. This makes a low Serum Ferritin the earliest and most sensitive indicator of an iron deficiency. You may see all other lab tests related to iron in the normal range, but with the Ferritin lower than optimal this would be enough to indicate they are approaching a low iron status. When Serum Ferritin is in the Clinical High range we must first determine if there is truly an overload or excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1) excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) a hereditary condition called Hemochromatosis, 4) an inflammatory process within the body, or 5) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.	
Lab Test Explanation for Ferritin, Serum at Functional High: Ferritin, Serum Your result for this lab test is in the FUNCTIONAL HIGH range. Serum Ferritin is a measure of the storage form of iron. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remaining 30% is found in tissues in its storage form called Ferritin. Your body will store away reserves of iron in the form of Ferritin in case of injury or blood loss resulting in loss of iron in the blood. Your body will then draw upon this storage of iron (Ferritin) to try and bring iron levels in the blood back up to a healthy level. In the situation of an iron deficiency your body will first deplete your storage of iron (Ferritin) in an effort to keep Serum Iron at a healthy level. This makes a low Serum Ferritin the earliest and most sensitive indicator of an iron deficiency. You may see all other lab tests related to iron in the normal range, but with the Ferritin lower than optimal this would be enough to indicate they are approaching a low iron status. When Serum Ferritin is in the Functional High range we must first determine if there is truly an excess of iron in the body by also looking at other iron-related lab tests. Factors that can contribute to iron excess in the body include: 1) excess intake from iron containing supplements, drinking water with high levels of iron and use of iron cookware, 2) a liver problem, 3) an inflammatory process within the body, or 4) poor conversion of iron into hemoglobin due to some other nutrient deficiency - such as B6, B12 or Folic Acid.	Special Instructions at Functional High:
Lab Test Explanation for Ferritin, Serum at Optimal: Ferritin, Serum Your result for this lab test is in the OPTIMAL range. Serum Ferritin is a measure of the storage form of iron. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remaining 30% is found in tissues in its storage form called Ferritin. Your body will store away reserves of iron in the form of Ferritin in case of injury or blood loss resulting in loss of iron in the blood. Your body will then draw upon this storage of iron (Ferritin) to try and bring iron	Special Instructions at Optimal:

levels in the blood back up to a healthy level. In the situation of an iron deficiency your body will first deplete your storage of iron (Ferritin) in an effort to keep Serum Iron at a healthy level. This makes a low Serum Ferritin the earliest and most sensitive indicator of an iron deficiency. You may see all other lab tests related to iron in the normal range, but with the Ferritin lower than optimal this would be enough to indicate they are approaching a low iron status.	
Lab Test Explanation for Ferritin, Serum at Functional Low: Ferritin, Serum Your result for this lab test is in the FUNCTIONAL LOW range. Serum Ferritin is a measure of the storage form of iron. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remaining 30% is found in tissues in its storage form called Ferritin. Your body will store away reserves of iron in the form of Ferritin in case of injury or blood loss resulting in loss of iron in the blood. Your body will then draw upon this storage of iron (Ferritin) to try and bring iron levels in the blood back up to a healthy level. In the situation of an iron deficiency your body will first deplete your storage of iron (Ferritin) in an effort to keep Serum Iron at a healthy level. This makes a low Serum Ferritin the earliest and most sensitive indicator of an iron deficiency. You may see all other lab tests related to iron in the normal range, but with the Ferritin lower than optimal this would be enough to indicate they are approaching a low iron status. When Serum Ferritin is in the Functional Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	Special Instructions at Functional Low:
Lab Test Explanation for Ferritin, Serum at Clinical Low: Ferritin, Serum Your result for this lab test is in the CLINICAL LOW range. Serum Ferritin is a measure of the storage form of iron. About 70% of iron in your body is incorporated into Hemoglobin inside your Red Blood Cells. The remaining 30% is found in tissues in its storage form called Ferritin. Your body will store away reserves of iron in the form of Ferritin in case of injury or blood loss resulting in loss of iron in the blood. Your body will then draw upon this storage of iron (Ferritin) to try and bring iron levels in the blood back up to a healthy level. In the situation of an iron deficiency your body will first deplete your storage of iron (Ferritin) in an effort to keep Serum Iron at a healthy level. This makes a low Serum Ferritin the earliest and most sensitive indicator of an iron deficiency. You may see all other lab tests related to iron in the normal range, but with the Ferritin lower than optimal this would be enough to indicate they are approaching a low iron status.	Special Instructions at Clinical Low:

When Serum Ferritin is in the Clinical Low range we must first determine if there is truly a deficiency of iron in the body by looking at other iron-related lab tests. Factors that can contribute to iron deficiency in the body include: 1) a lack of iron in the diet, 2) poor absorption of iron due to low stomach acid, 3) some type of bleeding within the body, 4) excessive menstrual bleeding for women, 5) a kidney problem, 6) a liver problem, 7) a need for Vitamin C which helps in the absorption of iron, or 8) an underactive or hypo-thyroid function.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Cholesterol, Total	Clinical High	200 or higher								
	Functional High	NA								
	Optimal	155 - 199								
	Functional Low	100 - 155								
	Clinical Low	0 - 99								

Lab Test Explanation for Cholesterol, Total at Clinical High:
Cholesterol, Total

Your result for this lab test is in the CLINICAL HIGH range. This test measures the total level of Cholesterol in your body. Cholesterol circulates in your blood in different fractions or particles called lipoproteins, and these particles are usually referred to as HDL, LDL and VLDL. The sum total of HDL, LDL, and VLDL will equal your Total Cholesterol. Cholesterol is often communicated as a bad thing, and we are given the impression that we always need to get Cholesterol to a lower number to be healthy. The reality is that Cholesterol is needed to be healthy and it is essential for life. What many people don't know is that in the original research on Cholesterol completed decades ago the researchers found that not only does high Cholesterol have a negative impact on health . . . mainly to your heart and cardiovascular system, but they also found that having low Cholesterol levels has its own unique set of consequences. Specifically, those people with low Cholesterol levels have an increased risk of developing cancer or other serious health problems over time.

It will help you to understand some of the functions of cholesterol within your body. Cholesterol is part of the cell membrane (the outer layer of the cell) for all the cells in your body, so Cholesterol is necessary for healthy cells. About 60% of your brain is made up of fat and Cholesterol, so having enough Cholesterol is needed for a healthy brain and nervous system. Cholesterol is a precursor of what gets converted into many of the different hormones in your body . . . including the male and female hormones and adrenal hormones, so Cholesterol is needed for healthy hormone levels. Cholesterol is even a pretty good antioxidant . . . which means that it has the ability to protect your cells from getting

Special Instructions at Clinical High:

damaged, and when your cells do get damaged Cholesterol can come to the rescue and help repair that cell damage. About 70% - 80% of the Cholesterol in your body is manufactured from within your own body . . . mostly by your liver. The remaining Cholesterol comes from your diet. So if Cholesterol is high it's less likely due to dietary intake, and more likely because your liver is producing more Cholesterol because the body is sensing it needs more to improve the health of your cells, nervous system and hormones, or your body is in need of more antioxidants so your liver produces more Cholesterol for the antioxidant benefit it offers. It also means that if Cholesterol is too low it could indicate a person has an underactive or hypo-liver function since the liver produces the majority of cholesterol found in the body. The most reliable method for testing Cholesterol is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Cholesterol is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Cholesterol values. When Total Cholesterol is in the Clinical High range we will first compare this to other lab results such as Triglycerides, HDL, LDL and thyroid tests . . . as these tests can give a better understanding of why Cholesterol is elevated. If Total Cholesterol is over 300 we begin to think about family genetics, especially if it's been at this level for many years. If Total Cholesterol is initially discovered to be in the 200 – 240 range . . . the goal for the first few months is usually to try a more conservative therapy by improving diet, exercise, and lifestyle factors and to also balance other aspects of body chemistry to see if this will bring Cholesterol closer to the Optimal range. If the Total Cholesterol is initially discovered to be over 240, or if a more conservative therapy of diet, exercise and lifestyle has not worked . . . then a more aggressive nutritional therapy may be recommended to target the high Total Cholesterol with the therapeutic goal of bringing this to a healthier level more quickly. Factors that can contribute to a high Total Cholesterol may include: 1) blood sugar issues and/or a diet high in sugars and carbohydrates, 2) underactive or hypo-thyroid function, 3) a problem affecting the liver, 4) underactive or hypo-adrenal function, and 5) a problem affecting the pancreas. It should be noted that some people have an elevated Total Cholesterol due to an allergy or sensitivity to eggs and their Cholesterol will be difficult to improve unless egg is removed from their diet.	
Lab Test Explanation for Cholesterol, Total at Functional High: Cholesterol, Total NA	Special Instructions at Functional High:
Lab Test Explanation for Cholesterol, Total at Optimal: Cholesterol, Total Your result for this lab test is in the OPTIMAL range. This test measures the total level of Cholesterol in your body. Cholesterol circulates in your blood in different fractions or particles called lipoproteins, and these particles are usually referred to as HDL, LDL and VLDL. The sum total of HDL, LDL, and VLDL will equal your Total Cholesterol. Cholesterol is often communicated as a bad thing, and we are given the impression that we always need to get Cholesterol to a lower	Special Instructions at Optimal:

number to be healthy. The reality is that Cholesterol is needed to be healthy and it is essential for life. What many people don't know is that in the original research on Cholesterol completed decades ago the researchers found that not only does high Cholesterol have a negative impact on health . . . mainly to your heart and cardiovascular system, but they also found that having low Cholesterol levels has its own unique set of consequences. Specifically, those people with low Cholesterol levels have an increased risk of developing cancer or other serious health problems over time. It will help you to understand some of the functions of cholesterol within your body. Cholesterol is part of the cell membrane (the outer layer of the cell) for all the cells in your body, so Cholesterol is necessary for healthy cells. About 60% of your brain is made up of fat and Cholesterol, so having enough Cholesterol is needed for a healthy brain and nervous system. Cholesterol is a precursor of what gets converted into many of the different hormones in your body . . . including the male and female hormones and adrenal hormones, so Cholesterol is needed for healthy hormone levels. Cholesterol is even a pretty good antioxidant . . . which means that it has the ability to protect your cells from getting damaged, and when your cells do get damaged Cholesterol can come to the rescue and help repair that cell damage. About 70% - 80% of the Cholesterol in your body is manufactured from within your own body . . . mostly by your liver. The remaining Cholesterol comes from your diet. So if Cholesterol is high it's less likely due to dietary intake, and more likely because your liver is producing more Cholesterol because the body is sensing it needs more to improve the health of your cells, nervous system and hormones, or your body is in need of more antioxidants so your liver produces more Cholesterol for the antioxidant benefit it offers. It also means that if Cholesterol is too low it could indicate a person has an underactive or hypo-liver function since the liver produces the majority of cholesterol found in the body. The most reliable method for testing Cholesterol is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Cholesterol is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Cholesterol values.	
Lab Test Explanation for Cholesterol, Total at Functional Low: Cholesterol, Total Your result for this lab test is in the FUNCTIONAL LOW range. This test measures the total level of Cholesterol in your body. Cholesterol circulates in your blood in different fractions or particles called lipoproteins, and these particles are usually referred to as HDL, LDL and VLDL. The sum total of HDL, LDL, and VLDL will equal your Total Cholesterol. Cholesterol is often communicated as a bad thing, and we are given the impression that we always need to get Cholesterol to a lower number to be healthy. The reality is that Cholesterol is needed to be healthy and it is essential for life. What many people don't know is that in the original research on Cholesterol completed decades ago the researchers found that not only does high Cholesterol have a negative impact on health . . . mainly to your heart and cardiovascular system, but they also found that having low Cholesterol levels has its own unique set of consequences. Specifically, those people with low Cholesterol levels have an increased risk of developing cancer or other serious health problems over time. It will help you to understand some of the functions of cholesterol within your body. Cholesterol is part of the cell membrane (the outer layer of the cell) for all the cells in your body, so Cholesterol is necessary for healthy cells. About	Special Instructions at Functional Low:

60% of your brain is made up of fat and Cholesterol, so having enough Cholesterol is needed for a healthy brain and nervous system. Cholesterol is a precursor of what gets converted into many of the different hormones in your body . . . including the male and female hormones and adrenal hormones, so Cholesterol is needed for healthy hormone levels. Cholesterol is even a pretty good antioxidant . . . which means that it has the ability to protect your cells from getting damaged, and when your cells do get damaged Cholesterol can come to the rescue and help repair that cell damage. About 70% - 80% of the Cholesterol in your body is manufactured from within your own body . . . mostly by your liver. The remaining Cholesterol comes from your diet. So if Cholesterol is high it's less likely due to dietary intake, and more likely because your liver is producing more Cholesterol because the body is sensing it needs more to improve the health of your cells, nervous system and hormones, or your body is in need of more antioxidants so your liver produces more Cholesterol for the antioxidant benefit it offers. It also means that if Cholesterol is too low it could indicate a person has an underactive or hypo-liver function since the liver produces the majority of cholesterol found in the body. The most reliable method for testing Cholesterol is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Cholesterol is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Cholesterol values. When the Total Cholesterol is in the Functional Low range we will first consider if a person is on some type of Cholesterol lowering medication. If on a medication the patient may want to speak with their prescribing doctor to ask about reducing the dose or making some change to the medication . . . especially while making a serious effort to improve diet, lifestyle and using nutritional therapies to balance your body chemistry. Other factors that can contribute to a low Total Cholesterol include: 1) underactive or hypo-liver function or other problem affecting the liver, 2) overactive or hyper-thyroid function or a thyroid medication dose that is too high, 3) poor nutrition and/or very low fat intake, 4) a vegetarian or vegan diet, 5) poor absorption due to a digestive problem, or 6) overactive or hyper-adrenal function. It should be noted that a sudden drop in Total Cholesterol should alert one to some type of pathology or inflammatory condition, and this would be confirmed with other lab tests being out of range.	
Lab Test Explanation for Cholesterol, Total at Clinical Low: Cholesterol, Total Your result for this lab test is in the CLINICAL LOW range. This test measures the total level of Cholesterol in your body. Cholesterol circulates in your blood in different fractions or particles called lipoproteins, and these particles are usually referred to as HDL, LDL and VLDL. The sum total of HDL, LDL, and VLDL will equal your Total Cholesterol. Cholesterol is often communicated as a bad thing, and we are given the impression that we always need to get Cholesterol to a lower number to be healthy. The reality is that Cholesterol is needed to be healthy and it is essential for life. What many people don't know is that in the original research on Cholesterol completed decades ago the researchers found that not only does high Cholesterol have a negative impact on health . . . mainly to your heart and cardiovascular system, but they also found that having low Cholesterol levels has its own unique set of consequences. Specifically, those people with low Cholesterol levels have an increased risk of developing cancer or other serious health problems over time.	Special Instructions at Clinical Low:

It will help you to understand some of the functions of cholesterol within your body. Cholesterol is part of the cell membrane (the outer layer of the cell) for all the cells in your body, so Cholesterol is necessary for healthy cells. About 60% of your brain is made up of fat and Cholesterol, so having enough Cholesterol is needed for a healthy brain and nervous system. Cholesterol is a precursor of what gets converted into many of the different hormones in your body . . . including the male and female hormones and adrenal hormones, so Cholesterol is needed for healthy hormone levels. Cholesterol is even a pretty good antioxidant . . . which means that it has the ability to protect your cells from getting damaged, and when your cells do get damaged Cholesterol can come to the rescue and help repair that cell damage. About 70% - 80% of the Cholesterol in your body is manufactured from within your own body . . . mostly by your liver. The remaining Cholesterol comes from your diet. So if Cholesterol is high it's less likely due to dietary intake, and more likely because your liver is producing more Cholesterol because the body is sensing it needs more to improve the health of your cells, nervous system and hormones, or your body is in need of more antioxidants so your liver produces more Cholesterol for the antioxidant benefit it offers. It also means that if Cholesterol is too low it could indicate a person has an underactive or hypo-liver function since the liver produces the majority of cholesterol found in the body. The most reliable method for testing Cholesterol is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If the Cholesterol is high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Cholesterol values. When the Total Cholesterol is in the Clinical Low range we will first consider if a person is on some type of Cholesterol lowering medication. If on a medication the patient may want to speak with their prescribing doctor to ask about reducing the dose or making some change to the medication . . . especially while making a serious effort to improve diet, lifestyle and using nutritional therapies to balance your body chemistry. Other factors that can contribute to a low Total Cholesterol include: 1) underactive or hypo-liver function or other problem affecting the liver, 2) overactive or hyper-thyroid function or a thyroid medication dose that is too high, 3) poor nutrition and/or very low fat intake, 4) a vegetarian or vegan diet, 5) poor absorption due to a digestive problem, or 6) overactive or hyper-adrenal function. It should be noted that a sudden drop in Total Cholesterol should alert one to some type of pathology or inflammatory condition, and this would be confirmed with other lab tests being out of range.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Triglycerides	Clinical High	150 or higher								
	Functional High	101 - 149								
	Optimal	75 - 100								
	Functional Low	0 - 74								
	Clinical Low	NA								

Lab Test Explanation for Triglycerides at Clinical High:
Triglycerides

Your result for this lab test is in the CLINICAL HIGH range. This test measures the total level of Triglycerides in your body. A Triglyceride is a substance that has sugar and fat combined together. The sugar and fatty acid portions of a Triglyceride are part of what your cells use as a fuel source for the energy they need to function. Triglycerides also get incorporated into your fat cells and become part of your storage of body fat. Abnormal Triglyceride levels will often reflect dietary intake of fat and carbohydrates, as well as poor blood sugar control, and can have a significant impact on cardiovascular health. The most reliable method for testing Triglycerides is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If Triglycerides are high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Triglyceride levels.

When Triglycerides are in the Clinical High range there are several factors to consider including: 1) blood sugar issues and/or a diet high in sugars, carbohydrates and fats, 2) underactive or hypo-thyroid function, 3) a problem affecting the liver, 4) underactive or hypo-adrenal function, 5) a problem affecting the pancreas, 6) an Omega 3 essential fatty acid deficiency, 7) a genetic condition resulting in elevated lipids and triglyceride levels, and 8) the effect of several medications. Extremely high Triglycerides can indicate pancreatitis or excessive alcohol intake.

Special Instructions at Clinical High:

Lab Test Explanation for Triglycerides at Functional High:
Triglycerides

Your result for this lab test is in the FUNCTIONAL HIGH range. This test measures the total level of Triglycerides in your body. A Triglyceride is a substance that has sugar and fat combined together. The sugar and fatty acid portions of a Triglyceride are part of what your cells use as a fuel source for the energy they need to function. Triglycerides also get incorporated into your fat cells and become part of your storage of body fat. Abnormal Triglyceride levels will often reflect dietary intake of fat and carbohydrates, as well as poor blood sugar control, and can have a significant impact on cardiovascular health. The most reliable method for testing Triglycerides is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If Triglycerides are high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Triglyceride levels.

Special Instructions at Functional High:

When Triglycerides are in the Functional High range there are several factors to consider including: 1) blood sugar issues and/or a diet high in sugars, carbohydrates and fats, 2) underactive or hypo-thyroid function, 3) a problem affecting the liver, 4) underactive or hypo-adrenal function, 5) a problem affecting the pancreas, 6) an Omega 3 essential fatty acid deficiency, 7) a genetic condition resulting in elevated lipids and triglyceride levels, and 8) the effect of several medications.	
Lab Test Explanation for Triglycerides at Optimal: Triglycerides Your result for this lab test is in the OPTIMAL range. This test measures the total level of Triglycerides in your body. A Triglyceride is a substance that has sugar and fat combined together. The sugar and fatty acid portions of a Triglyceride are part of what your cells use as a fuel source for the energy they need to function. Triglycerides also get incorporated into your fat cells and become part of your storage of body fat. Abnormal Triglyceride levels will often reflect dietary intake of fat and carbohydrates, as well as poor blood sugar control, and can have a significant impact on cardiovascular health. The most reliable method for testing Triglycerides is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If Triglycerides are high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Triglyceride levels.	Special Instructions at Optimal:
Lab Test Explanation for Triglycerides at Functional Low: Triglycerides Your result for this lab test is in the FUNCTIONAL LOW range. This test measures the total level of Triglycerides in your body. A Triglyceride is a substance that has sugar and fat combined together. The sugar and fatty acid portions of a Triglyceride are part of what your cells use as a fuel source for the energy they need to function. Triglycerides also get incorporated into your fat cells and become part of your storage of body fat. Abnormal Triglyceride levels will often reflect dietary intake of fat and carbohydrates, as well as poor blood sugar control, and can have a significant impact on cardiovascular health. The most reliable method for testing Triglycerides is after doing a 12 hour fasting . . . meaning there is no eating or drinking (except water) . . . for 12 hours prior to your blood draw. If Triglycerides are high and a person did NOT do a proper 12 hour fasting . . . then this lab result is invalid and this should be re-tested if there are concerns about Triglyceride levels. When Triglycerides are in the Functional Low range there are several factors to consider including: 1) underactive or hypo-liver function or other problem affecting the liver, 2) overactive or hyper-thyroid function or a thyroid medication dose that is too high, 3) poor nutrition and/or very low fat intake, 4) vegetarian or vegan diet, 5) poor absorption due to a digestive problem, 6) overactive or hyper-adrenal function, 7) a possible autoimmune condition - especially when seen with a high HDL at >80, and 8) the effect of some medications.	Special Instructions at Functional Low:

Lab Test Explanation for Triglycerides at Clinical Low:	Special Instructions at Clinical Low:
Triglycerides NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
HDL Cholesterol	Clinical High	100 or higher								
	Functional High	81 - 99								
	Optimal	60 - 80								
	Functional Low	40 - 59								
	Clinical Low	0 - 39								

Lab Test Explanation for HDL Cholesterol at Clinical High:	Special Instructions at Clinical High:
HDL Cholesterol Your result for this lab test is in the CLINICAL HIGH range. HDL refers to a form of cholesterol called High Density Lipoprotein. In order for Cholesterol to travel through your bloodstream it needs to be carried and transported by a particle called a lipoprotein, and HDL is one of these lipoprotein particles. You will often hear of this as the "good cholesterol", because these HDL particles have the ability to clean out deposits that can build-up in your arteries and HDL may prevent the build-up of plaque that can damage your blood vessels. Having your HDL levels high enough will help to protect and improve the health of your blood vessels and can be a positive factor in preventing cardiovascular problems including heart attack and stroke. The best ways we know of to naturally improve or maintain healthy levels of HDL is through regular exercise, consuming enough Omega 3 Essential Fatty Acids (EFA), maintaining healthy blood sugar levels, and keeping your body at a healthy weight. Although most conversations about HDL are about making sure these levels are high enough . . . levels that are too high can indicate an abnormal process within the body. When HDL Cholesterol is in the Clinical High range we must first consider if there is some type of autoimmune condition, or other inflammatory or cell destructive process within the body. Other factors that may contribute to a higher than optimal HDL Cholesterol may include: 1) underactive or hypo-thyroid function, 2) other hormone imbalance such as excess estrogen, 3) insulin use in diabetes, 4) a problem affecting the liver or pancreas, 5) the effect of some medications.	

Lab Test Explanation for HDL Cholesterol at Functional High: HDL Cholesterol Your result for this lab test is in the FUNCTIONAL HIGH range. HDL refers to a form of cholesterol called High Density Lipoprotein. In order for Cholesterol to travel through your bloodstream it needs to be carried and transported by a particle called a lipoprotein, and HDL is one of these lipoprotein particles. You will often hear of this as the "good cholesterol", because these HDL particles have the ability to clean out deposits that can build-up in your arteries and HDL may prevent the build-up of plaque that can damage your blood vessels. Having your HDL levels high enough will help to protect and improve the health of your blood vessels and can be a positive factor in preventing cardiovascular problems including heart attack and stroke. The best ways we know of to naturally improve or maintain healthy levels of HDL is through regular exercise, consuming enough Omega 3 Essential Fatty Acids (EFA), maintaining healthy blood sugar levels, and keeping your body at a healthy weight. Although most conversations about HDL are about making sure these levels are high enough . . . levels that are too high can indicate an abnormal process within the body. When HDL Cholesterol is in the Functional High range we must first consider if there is some type of autoimmune condition, or other inflammatory or cell destructive process within the body. Other factors that may contribute to a higher than optimal HDL Cholesterol may include: 1) underactive or hypo-thyroid function, 2) other hormone imbalance such as excess estrogen, 3) insulin use in diabetes, 4) a problem affecting the liver or pancreas, 5) the effect of some medications.	Special Instructions at Functional High:
Lab Test Explanation for HDL Cholesterol at Optimal: HDL Cholesterol Your result for this lab test is in the OPTIMAL range. HDL refers to a form of cholesterol called High Density Lipoprotein. In order for Cholesterol to travel through your bloodstream it needs to be carried and transported by a particle called a lipoprotein, and HDL is one of these lipoprotein particles. You will often hear of this as the "good cholesterol", because these HDL particles have the ability to clean out deposits that can build-up in your arteries and HDL may prevent the build-up of plaque that can damage your blood vessels. Having your HDL levels high enough will help to protect and improve the health of your blood vessels and can be a positive factor in preventing cardiovascular problems including heart attack and stroke. The best ways we know of to naturally improve or maintain healthy levels of HDL is through regular exercise, consuming enough Omega 3 Essential Fatty Acids (EFA), maintaining healthy blood sugar levels, and keeping your body at a healthy weight.	Special Instructions at Optimal:
Lab Test Explanation for HDL Cholesterol at Functional Low: HDL Cholesterol Your result for this lab test is in the FUNCTIONAL LOW range. HDL refers to a form of cholesterol called High Density Lipoprotein. In order for Cholesterol to travel through your bloodstream it needs to be carried and transported by a particle called a lipoprotein, and HDL is one of these lipoprotein particles. You will often hear of this as the "good cholesterol", because these HDL particles have the ability to clean out deposits that can build-up in your arteries and HDL	Special Instructions at Functional Low:

may prevent the build-up of plaque that can damage your blood vessels. Having your HDL levels high enough will help to protect and improve the health of your blood vessels and can be a positive factor in preventing cardiovascular problems including heart attack and stroke. The best ways we know of to naturally improve or maintain healthy levels of HDL is through regular exercise, consuming enough Omega 3 Essential Fatty Acids (EFA), maintaining healthy blood sugar levels, and keeping your body at a healthy weight. When HDL Cholesterol is in the Functional Low range there are several factors to consider to include: 1) Omega 3 EFA deficiency, 2) blood sugar issues or insulin resistance, 3) a problem affecting the liver, 4) a diet that is too high in sugar and carbohydrates, 5) overactive or hyper-thyroid function, 6) a lifestyle that is too sedentary / too little exercise, and 7) the effect of some medications.	
Lab Test Explanation for HDL Cholesterol at Clinical Low: HDL Cholesterol Your result for this lab test is in the CLINICAL LOW range. HDL refers to a form of cholesterol called High Density Lipoprotein. In order for Cholesterol to travel through your bloodstream it needs to be carried and transported by a particle called a lipoprotein, and HDL is one of these lipoprotein particles. You will often hear of this as the "good cholesterol", because these HDL particles have the ability to clean out deposits that can build-up in your arteries and HDL may prevent the build-up of plaque that can damage your blood vessels. Having your HDL levels high enough will help to protect and improve the health of your blood vessels and can be a positive factor in preventing cardiovascular problems including heart attack and stroke. The best ways we know of to naturally improve or maintain healthy levels of HDL is through regular exercise, consuming enough Omega 3 Essential Fatty Acids (EFA), maintaining healthy blood sugar levels, and keeping your body at a healthy weight. When HDL Cholesterol is in the Clinical Low range there are several factors to consider to include: 1) Omega 3 EFA deficiency, 2) blood sugar issues or insulin resistance, 3) a problem affecting the liver, 4) a diet that is too high in sugar and carbohydrates, 5) overactive or hyper-thyroid function, 6) a lifestyle that is too sedentary / too little exercise, and 7) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
VLDL Cholesterol	Clinical High	41 or higher								
	Functional High	31 - 40								
	Optimal	0 - 30								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for VLDL Cholesterol at Clinical High:
VLDL Cholesterol

Your result for this lab test is in the CLINICAL HIGH range. VLDL refers to Very Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. VLDL carries mostly triglycerides in your bloodstream, and then gets converted to LDL after losing its triglyceride. If LDL is the "bad cholesterol", then VLDL is considered the worst of the bad cholesterol. Many of the same things that affect LDL levels will also affect VLDL levels. The consequences of higher levels of VLDL are similar to having higher levels of LDL, and are associated with an increased risk for hardening of the arteries, and cardiovascular problems including heart attack and stroke.

Special Instructions at Clinical High:

Lab Test Explanation for VLDL Cholesterol at Functional High:
VLDL Cholesterol

Your result for this lab test is in the FUNCTIONAL HIGH range. VLDL refers to Very Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. VLDL carries mostly triglycerides in your bloodstream, and then gets converted to LDL after losing its triglyceride. If LDL is the "bad cholesterol", then VLDL is considered the worst of the bad cholesterol. Many of the same things that affect LDL levels will also affect VLDL levels. The consequences of higher levels of VLDL are similar to having higher levels of LDL, and are associated with an increased risk for hardening of the arteries, and cardiovascular problems including heart attack and stroke.

Special Instructions at Functional High:

Lab Test Explanation for VLDL Cholesterol at Optimal:
VLDL Cholesterol

Your result for this lab test is in the OPTIMAL range. VLDL refers to Very Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. VLDL carries mostly triglycerides in your bloodstream, and then gets converted to LDL after losing its

Special Instructions at Optimal:

triglyceride. If LDL is the "bad cholesterol", then VLDL is considered the worst of the bad cholesterol. Many of the same things that affect LDL levels will also affect VLDL levels. The consequences of higher levels of VLDL are similar to having higher levels of LDL, and are associated with an increased risk for hardening of the arteries, and cardiovascular problems including heart attack and stroke.	
Lab Test Explanation for VLDL Cholesterol at Functional Low: VLDL Cholesterol NA	Special Instructions at Functional Low:
Lab Test Explanation for VLDL Cholesterol at Clinical Low: VLDL Cholesterol NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
LDL Cholesterol	Clinical High	130 or higher								
	Functional High	100 - 129								
	Optimal	0 - 99								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for LDL Cholesterol at Clinical High: LDL Cholesterol Your result for this lab test is in the CLINICAL HIGH range. LDL refers to Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. LDL carries mostly cholesterol in your bloodstream bringing it to your cells and tissues because it is needed for many important functions. LDL is often called the "bad cholesterol" because excess amounts can result in cholesterol getting deposited in the walls of your blood vessels leading to hardening of the arteries and cardiovascular problems including heart attack and stroke. LDL (the bad cholesterol) has an inverse relationship with HDL (the good cholesterol) . . . meaning that as LDL increases HDL will often decrease. Many of the same things that will raise the good cholesterol (HDL) will also lower the bad cholesterol (LDL).	Special Instructions at Clinical High:

When LDL Cholesterol is in the Clinical High range there are many factors to consider to include: 1) Omega 3 EFA deficiency, 2) blood sugar issues or insulin resistance, 3) a problem affecting the liver, 4) a diet that is too high in sugar, carbohydrates, and saturated fats 5) underactive or hypo-thyroid function, 6) a lifestyle that is too sedentary / too little exercise, 7) a genetic condition that results in high Cholesterol and LDL, and 8) the effect of some medications.	
Lab Test Explanation for LDL Cholesterol at Functional High: LDL Cholesterol Your result for this lab test is in the FUNCTIONAL HIGH range. LDL refers to Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. LDL carries mostly cholesterol in your bloodstream bringing it to your cells and tissues because it is needed for many important functions. LDL is often called the "bad cholesterol" because excess amounts can result in cholesterol getting deposited in the walls of your blood vessels leading to hardening of the arteries and cardiovascular problems including heart attack and stroke. LDL (the bad cholesterol) has an inverse relationship with HDL (the good cholesterol) . . . meaning that as LDL increases HDL will often decrease. Many of the same things that will raise the good cholesterol (HDL) will also lower the bad cholesterol (LDL). When LDL Cholesterol is in the Functional High range there are many factors to consider to include: 1) Omega 3 EFA deficiency, 2) blood sugar issues or insulin resistance, 3) a problem affecting the liver, 4) a diet that is too high in sugar, carbohydrates, and saturated fats 5) underactive or hypo-thyroid function, 6) a lifestyle that is too sedentary / too little exercise, and 7) the effect of some medications.	Special Instructions at Functional High:
Lab Test Explanation for LDL Cholesterol at Optimal: LDL Cholesterol Your result for this lab test is in the OPTIMAL range. LDL refers to Low Density Lipoprotein. Because fat and water would normally want to separate from each other . . . we need a method of transporting fats through the water of our blood. A lipoprotein is a particle that helps to transport fats such as cholesterol and triglycerides through your bloodstream. LDL carries mostly cholesterol in your bloodstream bringing it to your cells and tissues because it is needed for many important functions. LDL is often called the "bad cholesterol" because excess amounts can result in cholesterol getting deposited in the walls of your blood vessels leading to hardening of the arteries and cardiovascular problems including heart attack and stroke. LDL (the bad cholesterol) has an inverse relationship with HDL (the good cholesterol) . . . meaning that as LDL increases HDL will often decrease. Many of the same things that will raise the good cholesterol (HDL) will also lower the bad cholesterol (LDL).	Special Instructions at Optimal:
Lab Test Explanation for LDL Cholesterol at Functional Low: LDL Cholesterol NA	Special Instructions at Functional Low:

Lab Test Explanation for LDL Cholesterol at Clinical Low:	Special Instructions at Clinical Low:
LDL Cholesterol NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
T. Chol/HDL Ratio	Clinical High	4.5 or higher								
	Functional High	2.6 - 4.4								
	Optimal	0.0 - 2.5								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for T. Cholesterol/HDL Ratio at Clinical High:	Special Instructions at Clinical High:
T. Cholesterol/HDL Ratio Your result for this lab test is in the CLINICAL HIGH range. The Total Cholesterol/HDL Ratio simply compares the amount of Cholesterol to the amount of HDL (good cholesterol) and gives you a ratio or number. This ratio is a common way to determine your future risk of cardiovascular problems based on Cholesterol (or lipid) values. A higher ratio or number can mean an increased risk for cardiovascular problems, and a lower number can mean that you have a lower risk of cardiovascular problems.	
Lab Test Explanation for T. Cholesterol/HDL Ratio at Functional High:	Special Instructions at Functional High:
T. Cholesterol/HDL Ratio Your result for this lab test is in the FUNCTIONAL HIGH range. The Total Cholesterol/HDL Ratio simply compares the amount of Cholesterol to the amount of HDL (good cholesterol) and gives you a ratio or number. This ratio is a common way to determine your future risk of cardiovascular problems based on Cholesterol (or lipid) values. A higher ratio or number can mean an increased risk for cardiovascular problems, and a lower number can mean that you have a lower risk of cardiovascular problems.	
Lab Test Explanation for T. Cholesterol/HDL Ratio at Optimal:	Special Instructions at Optimal:
T. Cholesterol/HDL Ratio Your result for this lab test is in the OPTIMAL range. The Total Cholesterol/HDL Ratio simply compares the amount of Cholesterol to the amount of HDL (good cholesterol) and gives you a ratio or number. This ratio is a common way to	

determine your future risk of cardiovascular problems based on Cholesterol (or lipid) values. A higher ratio or number can mean an increased risk for cardiovascular problems, and a lower number can mean that you have a lower risk of cardiovascular problems.	
Lab Test Explanation for T. Cholesterol/HDL Ratio at Functional Low: T. Cholesterol/HDL Ratio NA	Special Instructions at Functional Low:
Lab Test Explanation for T. Cholesterol/HDL Ratio at Clinical Low: T. Cholesterol/HDL Ratio NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
C-Reactive Protein, Cardiac	Clinical High	3.01 or higher								
	Functional High	1.00 -3.00								
	Optimal	0.00 - 0.99								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for C-Reactive Protein, Cardiac at Clinical High: C-Reactive Protein, Cardiac Your result for this lab test is in the CLINICAL HIGH range. C-Reactive Protein is produced by the liver and it is released into the bloodstream with inflammation, infection and injury of tissues. It is most often used as a measure of inflammation within the body that tends to be more recent or more acute. The "Cardiac" portion of this lab test name refers the High Sensitivity version of this lab test. This means we are trying to detect smaller levels of this protein due to inflammation which has also been shown to be a risk factor for cardiovascular problems, and its ability to predict the risk of a future cardiovascular event such as heart attack and stroke. However, the inflammation may be located anywhere in the body and is not specific to only the cardiovascular system. Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases that people suffer with when they get older. Identifying inflammation now and getting it under control could very well	Special Instructions at Clinical High:

help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem. When C-Reactive Protein is in the Clinical High range we will assume that there is inflammation in the body . . . although we will not yet know the cause of the inflammation or where it is located. We will need to compare this lab result with other lab testing to see if there may be an infection or stress within some organ systems that may account for this inflammation. Sometimes we cannot easily determine the cause of inflammation, but we will still want to take action to reduce the inflammation since research shows that increased levels of C-Reactive protein is a strong predictor of a future heart attack or stroke.	
Lab Test Explanation for C-Reactive Protein, Cardiac at Functional High: C-Reactive Protein, Cardiac Your result for this lab test is in the FUNCTIONAL HIGH range. C-Reactive Protein is produced by the liver and it is released into the bloodstream with inflammation, infection and injury of tissues. It is most often used as a measure of inflammation within the body that tends to be more recent or more acute. The "Cardiac" portion of this lab test name refers the High Sensitivity version of this lab test. This means we are trying to detect smaller levels of this protein due to inflammation which has also been shown to be a risk factor for cardiovascular problems, and its ability to predict the risk of a future cardiovascular event such as heart attack and stroke. However, the inflammation may be located anywhere in the body and is not specific to only the cardiovascular system. Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases that people suffer with when they get older. Identifying inflammation now and getting it under control could very well help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem. When C-Reactive Protein is in the Functional High range we will assume that there is inflammation in the body . . . although we will not yet know the cause of the inflammation or where it is located. We will need to compare this lab result with other lab testing to see if there may be an infection or stress within some organ systems that may account for this inflammation. Sometimes we cannot easily determine the cause of inflammation, but we will want to monitor this and possibly take some action to reduce the inflammation since research shows that increased levels of C-Reactive Protein is a strong predictor of a future heart attack or stroke.	Special Instructions at Functional High:
Lab Test Explanation for C-Reactive Protein, Cardiac at Optimal: C-Reactive Protein, Cardiac Your result for this lab test is in the OPTIMAL range. C-Reactive Protein is produced by the liver and it is released into the bloodstream with inflammation, infection and injury of tissues. It is most often used as a measure of inflammation within the body that tends to be more recent or more acute. The "Cardiac" portion of this lab test name refers the High Sensitivity version of this lab test. This means we are trying to detect smaller levels of this protein due to inflammation which has also been shown to be a risk factor for cardiovascular problems, and its ability to predict the risk of a future cardiovascular event such as heart attack and stroke. However, the inflammation may be located anywhere in the body	Special Instructions at Optimal:

and is not specific to only the cardiovascular system. Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases that people suffer with when they get older. Identifying inflammation now and getting it under control could very well help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem.	
Lab Test Explanation for C-Reactive Protein, Cardiac at Functional Low: C-Reactive Protein, Cardiac NA	Special Instructions at Functional Low:
Lab Test Explanation for C-Reactive Protein, Cardiac at Clinical Low: C-Reactive Protein, Cardiac NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Homocysteine, Plasma	Clinical High	15.1 or higher								
	Functional High	9.0 - 15.0								
	Optimal	0.0 - 8.9								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Homocysteine, Plasma at Clinical High: Homocysteine, Plasma Your result for this lab test is in the CLINICAL HIGH range. Homocysteine is an amino acid that is usually found in only very small amounts in your cells and blood, because it will normally be quickly converted into other substances. Vitamins B6, B12 and Folic acid are needed for the conversion of Homocysteine into other products, so elevated Homocysteine levels are usually associated with a deficiency of one or more of these B Vitamins. It is thought that elevated Homocysteine levels may be an important cause of inflammation in your arteries and can contribute to heart disease and other cardiovascular diseases. One may want to consider a strategy which includes therapeutic doses of Vitamins B6, B12 and Folic Acid to lower high Homocysteine levels . . . especially if other cardiovascular-related lab tests show a concern.	Special Instructions at Clinical High:

Lab Test Explanation for Homocysteine, Plasma at Functional High: Homocysteine, Plasma Your result for this lab test is in the FUNCTIONAL HIGH range. Homocysteine is an amino acid that is usually found in only very small amounts in your cells and blood, because it will normally be quickly converted into other substances. Vitamins B6, B12 and Folic acid are needed for the conversion of Homocysteine into other products, so elevated Homocysteine levels are usually associated with a deficiency of one or more of these B Vitamins. It is thought that elevated Homocysteine levels may be an important cause of inflammation in your arteries and can contribute to heart disease and other cardiovascular diseases. One may want to consider a strategy which includes therapeutic doses of Vitamins B6, B12 and Folic Acid to lower high Homocysteine levels . . . especially if other cardiovascular-related lab tests show a concern.	Special Instructions at Functional High:
Lab Test Explanation for Homocysteine, Plasma at Optimal: Homocysteine, Plasma Your result for this lab test is in the OPTIMAL range. Homocysteine is an amino acid that is usually found in only very small amounts in your cells and blood, because it will normally be quickly converted into other substances. Vitamins B6, B12 and Folic acid are needed for the conversion of Homocysteine into other products, so elevated Homocysteine levels are usually associated with a deficiency of one or more of these B Vitamins. It is thought that elevated Homocysteine levels may be an important cause of inflammation in your arteries and can contribute to heart disease and other cardiovascular diseases. One may want to consider a strategy which includes therapeutic doses of Vitamins B6, B12 and Folic Acid to lower high Homocysteine levels . . . especially if other cardiovascular-related lab tests show a concern.	Special Instructions at Optimal:
Lab Test Explanation for Homocysteine, Plasma at Functional Low: Homocysteine, Plasma NA	Special Instructions at Functional Low:
Lab Test Explanation for Homocysteine, Plasma at Clinical Low: Homocysteine, Plasma NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
TSH	Clinical High	4.51 or higher								
	Functional High	2.51 - 4.50								
	Optimal	1.00 - 2.50								
	Functional Low	0.45 - 0.99								
	Clinical Low	0.00 - 0.44								

Lab Test Explanation for TSH at Clinical High:
TSH

Your result for this lab test is in the CLINICAL HIGH range. TSH refers to Thyroid Stimulating Hormone and it is with this hormone that the brain (or more specifically a part of the brain called the pituitary) is able to control the thyroid gland and the production of thyroid hormone. Thyroid hormone plays a major role in controlling your metabolism and energy production. If the brain senses too little thyroid hormone in the body then TSH will increase to tell the thyroid to produce more hormone. If the brain senses there is too much thyroid hormone in the body then TSH will decrease as a way of telling the thyroid to produce less hormone. TSH is the most common lab test performed by doctors to measure thyroid function. However, too many health providers rely on this test as the only measure of thyroid function, and this can be very misleading. The TSH lab result can be in the labs normal range and a person can still have altered thyroid function as determined by other thyroid lab tests. This overreliance on TSH as a primary indicator of thyroid function has resulted in millions of people not getting properly diagnosed with a real thyroid problem. A more comprehensive testing of thyroid function should be performed to have greater confidence that the thyroid gland is truly working at an optimal level . . . especially when a person is struggling with several symptoms of poor thyroid function.

The thyroid has the nickname of the “great mimicker” because poor thyroid function can cause many symptoms and mimic many other health conditions. Some people go from one doctor to another trying to find out what is causing their symptoms . . . only to find out that their poor thyroid function is playing a major role in their health problems. Symptoms of underactive or hypo-thyroid function can include: fatigue, weight gain, soreness in muscles and joints, headaches, depression, constipation, slow metabolism, hair falling out, dry skin, intolerance to cold, menstrual changes in women, and more. Symptoms of overactive or hyper-thyroid function can include: sudden weight loss, anxiety and nervousness, rapid heartbeat, hands and fingers trembling, increased sweating, enlarged thyroid gland / swelling of the neck, difficulty sleeping, and more. Because poor thyroid function can affect many metabolic functions within the body, and can alter many lab results (not just the ones testing thyroid directly) . . . improving thyroid function becomes a higher priority when it’s discovered that it’s not functioning at an optimal level.

When the TSH is in the Clinical High range this will indicate an underactive or hypo-thyroid function. It will help to compare this with other thyroid lab tests to confirm hypothyroidism. Many thyroid conditions involve an autoimmune reaction in which your immune system is attacking the thyroid gland or some aspect of thyroid function, so it will be helpful to also do

Special Instructions at Clinical High:

thyroid antibody testing as this may change your dietary or therapeutic nutritional recommendations if your thyroid problems are in part due to an autoimmune condition. Other factors that can contribute to TSH in the Clinical High range may include: 1) a liver problem as the liver is highly involved in converting thyroid hormone into its most biologically active form called T3, 2) a pituitary problem as the pituitary produces TSH to control the thyroid gland, 3) a hypothalamus problem as the hypothalamus controls the pituitary and this is really the beginning of the hormonal communication within the body, 4) other hormone imbalance such as excess estrogen (estrogen dominance) affecting thyroid function, 5) chemicals or toxic heavy metals in the body disrupting thyroid function, 6) nutrient deficiencies such as iodine and selenium that can affect thyroid function, and 7) the effect of some medications - including taking a taking a thyroid medication dose that is too low for your body if on thyroid medication.	
Lab Test Explanation for TSH at Functional High: TSH Your result for this lab test is in the FUNCTIONAL HIGH range. TSH refers to Thyroid Stimulating Hormone and it is with this hormone that the brain (or more specifically a part of the brain called the pituitary) is able to control the thyroid gland and the production of thyroid hormone. Thyroid hormone plays a major role in controlling your metabolism and energy production. If the brain senses too little thyroid hormone in the body then TSH will increase to tell the thyroid to produce more hormone. If the brain senses there is too much thyroid hormone in the body then TSH will decrease as a way of telling the thyroid to produce less hormone. TSH is the most common lab test performed by doctors to measure thyroid function. However, too many health providers rely on this test as the only measure of thyroid function, and this can be very misleading. The TSH lab result can be in the labs normal range and a person can still have altered thyroid function as determined by other thyroid lab tests. This overreliance on TSH as a primary indicator of thyroid function has resulted in millions of people not getting properly diagnosed with a real thyroid problem. A more comprehensive testing of thyroid function should be performed to have greater confidence that the thyroid gland is truly working at an optimal level . . . especially when a person is struggling with several symptoms of poor thyroid function. The thyroid has the nickname of the “great mimicker” because poor thyroid function can cause many symptoms and mimic many other health conditions. Some people go from one doctor to another trying to find out what is causing their symptoms . . . only to find out that their poor thyroid function is playing a major role in their health problems. Symptoms of underactive or hypo-thyroid function can include: fatigue, weight gain, soreness in muscles and joints, headaches, depression, constipation, slow metabolism, hair falling out, dry skin, intolerance to cold, menstrual changes in women, and more. Symptoms of overactive or hyper-thyroid function can include: sudden weight loss, anxiety and nervousness, rapid heartbeat, hands and fingers trembling, increased sweating, enlarged thyroid gland / swelling of the neck, difficulty sleeping, and more. Because poor thyroid function can affect many metabolic functions within the body, and can alter many lab results (not just the ones testing thyroid directly) . . . improving thyroid function becomes a higher priority when it’s discovered that it’s not functioning at an optimal level. When the TSH is in the Functional High range this will indicate a pre-hypothyroid condition. Meaning that it does not meet the clinical definition of hypothyroidism, but a person may still be experiencing symptoms and the effects of lowered	Special Instructions at Functional High:

thyroid function. Instead of waiting for the problem to get worse . . . which could take many years and a slow decline of health over those years . . . It would be much more beneficial to take action now to bring thyroid function back to optimal. It will always help to compare this with other thyroid lab tests to confirm changes in thyroid function. Factors that can contribute to TSH in the Functional High range may include: 1) a liver problem as the liver is highly involved in converting thyroid hormone into its most biologically active form called T3, 2) a pituitary problem as the pituitary produces TSH to control the thyroid gland, 3) a hypothalamus problem as the hypothalamus controls the pituitary and this is really the beginning of the hormonal communication within the body, 4) other hormone imbalance such as excess estrogen (estrogen dominance) affecting thyroid function, 5) chemicals or toxic heavy metals in the body disrupting thyroid function, 6) nutrient deficiencies such as iodine and selenium that can affect thyroid function, and 7) the effect of some medications - including taking a taking a thyroid medication dose that is a little too low for your body if on thyroid medication.	
Lab Test Explanation for TSH at Optimal: TSH Your result for this lab test is in the OPTIMAL range. TSH refers to Thyroid Stimulating Hormone and it is with this hormone that the brain (or more specifically a part of the brain called the pituitary) is able to control the thyroid gland and the production of thyroid hormone. Thyroid hormone plays a major role in controlling your metabolism and energy production. If the brain senses too little thyroid hormone in the body then TSH will increase to tell the thyroid to produce more hormone. If the brain senses there is too much thyroid hormone in the body then TSH will decrease as a way of telling the thyroid to produce less hormone. TSH is the most common lab test performed by doctors to measure thyroid function. However, too many health providers rely on this test as the only measure of thyroid function, and this can be very misleading. The TSH lab result can be in the labs normal range and a person can still have altered thyroid function as determined by other thyroid lab tests. This overreliance on TSH as a primary indicator of thyroid function has resulted in millions of people not getting properly diagnosed with a real thyroid problem. A more comprehensive testing of thyroid function should be performed to have greater confidence that the thyroid gland is truly working at an optimal level . . . especially when a person is struggling with several symptoms of poor thyroid function. The thyroid has the nickname of the “great mimicker” because poor thyroid function can cause many symptoms and mimic many other health conditions. Some people go from one doctor to another trying to find out what is causing their symptoms . . . only to find out that their poor thyroid function is playing a major role in their health problems. Symptoms of underactive or hypo-thyroid function can include: fatigue, weight gain, soreness in muscles and joints, headaches, depression, constipation, slow metabolism, hair falling out, dry skin, intolerance to cold, menstrual changes in women, and more. Symptoms of overactive or hyper-thyroid function can include: sudden weight loss, anxiety and nervousness, rapid heartbeat, hands and fingers trembling, increased sweating, enlarged thyroid gland / swelling of the neck, difficulty sleeping, and more. Because poor thyroid function can affect many metabolic functions within the body, and can alter many lab results (not just the ones testing thyroid directly) . . . improving thyroid function becomes a higher priority when it’s discovered that it’s not functioning at an optimal level.	Special Instructions at Optimal:

Lab Test Explanation for TSH at Functional Low:	Special Instructions at Functional Low:
TSH Your result for this lab test is in the FUNCTIONAL LOW range. TSH refers to Thyroid Stimulating Hormone and it is with this hormone that the brain (or more specifically a part of the brain called the pituitary) is able to control the thyroid gland and the production of thyroid hormone. Thyroid hormone plays a major role in controlling your metabolism and energy production. If the brain senses too little thyroid hormone in the body then TSH will increase to tell the thyroid to produce more hormone. If the brain senses there is too much thyroid hormone in the body then TSH will decrease as a way of telling the thyroid to produce less hormone. TSH is the most common lab test performed by doctors to measure thyroid function. However, too many health providers rely on this test as the only measure of thyroid function, and this can be very misleading. The TSH lab result can be in the labs normal range and a person can still have altered thyroid function as determined by other thyroid lab tests. This overreliance on TSH as a primary indicator of thyroid function has resulted in millions of people not getting properly diagnosed with a real thyroid problem. A more comprehensive testing of thyroid function should be performed to have greater confidence that the thyroid gland is truly working at an optimal level . . . especially when a person is struggling with several symptoms of poor thyroid function. The thyroid has the nickname of the “great mimicker” because poor thyroid function can cause many symptoms and mimic many other health conditions. Some people go from one doctor to another trying to find out what is causing their symptoms . . . only to find out that their poor thyroid function is playing a major role in their health problems. Symptoms of underactive or hypo-thyroid function can include: fatigue, weight gain, soreness in muscles and joints, headaches, depression, constipation, slow metabolism, hair falling out, dry skin, intolerance to cold, menstrual changes in women, and more. Symptoms of overactive or hyper-thyroid function can include: sudden weight loss, anxiety and nervousness, rapid heartbeat, hands and fingers trembling, increased sweating, enlarged thyroid gland / swelling of the neck, difficulty sleeping, and more. Because poor thyroid function can affect many metabolic functions within the body, and can alter many lab results (not just the ones testing thyroid directly) . . . improving thyroid function becomes a higher priority when it’s discovered that it’s not functioning at an optimal level. When the TSH is in the Functional Low range this will indicate a pre-hyperthyroid condition. Meaning that it does not meet the clinical definition of hyperthyroidism, but a person may still be experiencing symptoms and the effects of overactive thyroid function. Instead of waiting for the problem to get worse . . . which could take many years and a slow decline of health over those years . . . It would be much more beneficial to take action now to bring thyroid function back to optimal. It will always help to compare this with other thyroid lab tests to confirm changes in thyroid function. Factors that can contribute to TSH in the Functional Low range may include: 1) a pituitary problem as the pituitary produces TSH to control the thyroid gland, 2) a hypothalamus problem as the hypothalamus controls the pituitary and this is really the beginning of the hormonal communication within the body, 3) chemicals or toxic heavy metals in the body disrupting thyroid function, or 4) the effect of some medications - including taking a thyroid medication dose that is a little too high for your body if on thyroid medication.	

Lab Test Explanation for TSH at Clinical Low:	Special Instructions at Clinical Low:
TSH Your result for this lab test is in the CLINICAL LOW range. TSH refers to Thyroid Stimulating Hormone and it is with this hormone that the brain (or more specifically a part of the brain called the pituitary) is able to control the thyroid gland and the production of thyroid hormone. Thyroid hormone plays a major role in controlling your metabolism and energy production. If the brain senses too little thyroid hormone in the body then TSH will increase to tell the thyroid to produce more hormone. If the brain senses there is too much thyroid hormone in the body then TSH will decrease as a way of telling the thyroid to produce less hormone. TSH is the most common lab test performed by doctors to measure thyroid function. However, too many health providers rely on this test as the only measure of thyroid function, and this can be very misleading. The TSH lab result can be in the labs normal range and a person can still have altered thyroid function as determined by other thyroid lab tests. This overreliance on TSH as a primary indicator of thyroid function has resulted in millions of people not getting properly diagnosed with a real thyroid problem. A more comprehensive testing of thyroid function should be performed to have greater confidence that the thyroid gland is truly working at an optimal level . . . especially when a person is struggling with several symptoms of poor thyroid function. The thyroid has the nickname of the “great mimicker” because poor thyroid function can cause many symptoms and mimic many other health conditions. Some people go from one doctor to another trying to find out what is causing their symptoms . . . only to find out that their poor thyroid function is playing a major role in their health problems. Symptoms of underactive or hypo-thyroid function can include: fatigue, weight gain, soreness in muscles and joints, headaches, depression, constipation, slow metabolism, hair falling out, dry skin, intolerance to cold, menstrual changes in women, and more. Symptoms of overactive or hyper-thyroid function can include: sudden weight loss, anxiety and nervousness, rapid heartbeat, hands and fingers trembling, increased sweating, enlarged thyroid gland / swelling of the neck, difficulty sleeping, and more. Because poor thyroid function can affect many metabolic functions within the body, and can alter many lab results (not just the ones testing thyroid directly) . . . improving thyroid function becomes a higher priority when it’s discovered that it’s not functioning at an optimal level. When the TSH is in the Clinical Low range this will indicate an overactive or hyper-thyroid function. It will help to compare this with other thyroid lab tests to confirm hyperthyroidism. Many thyroid conditions involve an autoimmune reaction in which your immune system is attacking the thyroid gland or some aspect of thyroid function, so it will be helpful to also do thyroid antibody testing as this may change your dietary or therapeutic nutritional recommendations if your thyroid problems are in part due to an autoimmune condition. Other factors that can contribute to TSH in the Clinical Low range may include: 1) a pituitary problem as the pituitary produces TSH to control the thyroid gland, 2) a hypothalamus problem as the hypothalamus controls the pituitary and this is really the beginning of the hormonal communication within the body, 3) chemicals or toxic heavy metals in the body disrupting thyroid function, or 4) the effect of some medications - including taking a thyroid medication dose that is too high for your body if on thyroid medication.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Thyroxine (Total T4)	Clinical High	12.1 or higher								
	Functional High	NA								
	Optimal	6.0 - 12.0								
	Functional Low	4.5 - 5.9								
	Clinical Low	0.0 - 4.4								

Lab Test Explanation for Thyroxine (Total T4) at Clinical High:
Thyroxine (Total T4)

Your result for this lab test is in the CLINICAL HIGH range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of T4 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells.

When Thyroxine (Total T4) is in the Clinical High range we would first want to determine if a person has either an overactive or hyper-thyroid function, or if a person is on a thyroid medication that may be at too high of a dose for their body size. It will help to compare this with other thyroid lab tests to confirm hyperthyroidism, and to get a list of medications to see if this abnormal lab result is drug induced. Other factors that may contribute to a higher than optimal Thyroxine (Total T4) include: 1) liver problem, 2) adrenal problem, 3) other hormone imbalance such as excess estrogen or estrogen hormone replacement, 4) the effect of some medications.

Special Instructions at Clinical High:

Lab Test Explanation for Thyroxine (Total T4) at Functional High:
Thyroxine (Total T4)

NA

Special Instructions at Functional High:

Lab Test Explanation for Thyroxine (Total T4) at Optimal:
Thyroxine (Total T4)

Your result for this lab test is in the OPTIMAL range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of T4 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells.

Special Instructions at Optimal:

Lab Test Explanation for Thyroxine (Total T4) at Functional Low: Thyroxine (Total T4) Your result for this lab test is in the FUNCTIONAL LOW range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of T4 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Thyroxine (Total T4) is in the Functional Low range this would indicate a pre-hypothyroid condition. Meaning that it does not meet the clinical definition of hypothyroidism, but a person may still be experiencing symptoms and the effects of lowered thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally. Other factors that may contribute to a lower than optimal Thyroxine (Total T4) include: 1) liver problem, 2) a person taking a T3 thyroid medication may suppress Total T4, 3) a pituitary problem, and 4) the effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for Thyroxine (Total T4) at Clinical Low: Thyroxine (Total T4) Your result for this lab test is in the CLINICAL LOW range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of T4 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Thyroxine (Total T4) is in the Clinical Low range we would first want to determine if a person has an underactive or hypo-thyroid function. It will help to compare this with other thyroid lab tests to confirm hypothyroidism. Other factors that may contribute to a lower than optimal Thyroxine (Total T4) include: 1) liver problem, 2) a person taking a T3 thyroid medication may suppress Total T4, 3) a pituitary problem, and 4) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
T3 Uptake	Clinical High	40 or higher								
	Functional High	38 - 39								
	Optimal	27 - 37								
	Functional Low	24 - 26								
	Clinical Low	0 - 23								

Lab Test Explanation for T3 Uptake at Clinical High:	Special Instructions at Clinical High:
T3 Uptake Your result for this lab test is in the CLINICAL HIGH range. T3 Uptake measures the number of binding sites that are available on proteins that would bind to Thyroxine (T4). It is usually measured as a percentage, and this number is needed to determine the result of another lab test called the Free Thyroxine Index. This lab test is normally done with other thyroid lab tests as it provides limited information on its own. It is used as a way to rule out an error in the labs reporting of increased T4 levels. If T4 and T3 Uptake are both increased . . . then it helps to confirm a true increase in T4 levels. When T3 Uptake is in the Clinical High range there are many factors to consider including: 1) overactive or hyper-thyroid function, 2) some thyroid medications will increase T3 Uptake, 3) elevated testosterone levels in the body, 4) a liver problem, 5) a kidney problem, 6) the effect of some medications.	
Lab Test Explanation for T3 Uptake at Functional High:	Special Instructions at Functional High:
T3 Uptake Your result for this lab test is in the FUNCTIONAL HIGH range. T3 Uptake measures the number of binding sites that are available on proteins that would bind to Thyroxine (T4). It is usually measured as a percentage, and this number is needed to determine the result of another lab test called the Free Thyroxine Index. This lab test is normally done with other thyroid lab tests as it provides limited information on its own. It is used as a way to rule out an error in the labs reporting of increased T4 levels. If T4 and T3 Uptake are both increased . . . then it helps to confirm a true increase in T4 levels. When T3 Uptake is in the Functional High range there are many factors to consider including: 1) overactive or hyper-thyroid function, 2) some thyroid medications will increase T3 Uptake, 3) elevated testosterone levels in the body, 4) a liver problem, 5) a kidney problem, 6) the effect of some medications.	
Lab Test Explanation for T3 Uptake at Optimal:	Special Instructions at Optimal:
T3 Uptake Your result for this lab test is in the OPTIMAL range. T3 Uptake measures the number of binding sites that are available on proteins that would bind to Thyroxine (T4). It is usually measured as a percentage, and this number is needed to	

determine the result of another lab test called the Free Thyroxine Index. This lab test is normally done with other thyroid lab tests as it provides limited information on its own. It is used as a way to rule out an error in the labs reporting of increased T4 levels. If T4 and T3 Uptake are both increased . . . then it helps to confirm a true increase in T4 levels.	
Lab Test Explanation for T3 Uptake at Functional Low: T3 Uptake Your result for this lab test is in the FUNCTIONAL LOW range. T3 Uptake measures the number of binding sites that are available on proteins that would bind to Thyroxine (T4). It is usually measured as a percentage, and this number is needed to determine the result of another lab test called the Free Thyroxine Index. This lab test is normally done with other thyroid lab tests as it provides limited information on its own. It is used as a way to rule out an error in the labs reporting of increased T4 levels. If T4 and T3 Uptake are both increased . . . then it helps to confirm a true increase in T4 levels. When T3 Uptake is in the Functional Low range there are many factors to consider including: 1) underactive or hypo-thyroid function, 2) a pituitary problem, 3) a nutrient deficiency in iodine or selenium, 4) elevated estrogen levels in the body, 4) a liver problem, 5) the effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for T3 Uptake at Clinical Low: T3 Uptake Your result for this lab test is in the CLINICAL LOW range. T3 Uptake measures the number of binding sites that are available on proteins that would bind to Thyroxine (T4). It is usually measured as a percentage, and this number is needed to determine the result of another lab test called the Free Thyroxine Index. This lab test is normally done with other thyroid lab tests as it provides limited information on its own. It is used as a way to rule out an error in the labs reporting of increased T4 levels. If T4 and T3 Uptake are both increased . . . then it helps to confirm a true increase in T4 levels. When T3 Uptake is in the Clinical Low range there are many factors to consider including: 1) underactive or hypo-thyroid function, 2) a pituitary problem, 3) a nutrient deficiency in iodine or selenium, 4) elevated estrogen levels in the body, 4) a liver problem, 5) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Free Thyroxine Index	Clinical High	5.0 or higher								
	Functional High	NA								
	Optimal	1.2 - 4.9								
	Functional Low	NA								
	Clinical Low	0.0 - 1.1								

Lab Test Explanation for Free Thyroxine Index at Clinical High: Free Thyroxine Index Your result for this lab test is in the CLINICAL HIGH range. The Free Thyroxine Index (FTI) is a measurement created by multiplying the Total T4 and T3 Uptake together, and is an indirect way to determine Free T4 levels by using this calculation. This calculation has been found to be a less reliable way to measure Free T4 compared to simply testing Free T4 directly in blood testing. Higher than optimal Free Thyroxine Index would indicate an overactive or hyper-thyroid function, but this must be compared with other thyroid labs tests to confirm if there is a thyroid problem.	Special Instructions at Clinical High:
Lab Test Explanation for Free Thyroxine Index at Functional High: Free Thyroxine Index NA	Special Instructions at Functional High:
Lab Test Explanation for Free Thyroxine Index at Optimal: Free Thyroxine Index Your result for this lab test is in the OPTIMAL range. The Free Thyroxine Index (FTI) is a measurement created by multiplying the Total T4 and T3 Uptake together, and is an indirect way to determine Free T4 levels by using this calculation. This calculation has been found to be a less reliable way to measure Free T4 compared to simply testing Free T4 directly in blood testing.	Special Instructions at Optimal:
Lab Test Explanation for Free Thyroxine Index at Functional Low: Free Thyroxine Index NA	Special Instructions at Functional Low:
Lab Test Explanation for Free Thyroxine Index at Clinical Low: Free Thyroxine Index Your result for this lab test is in the CLINICAL LOW range. The Free Thyroxine Index (FTI) is a measurement created by multiplying the Total T4 and T3 Uptake together, and is an indirect way to determine Free T4 levels by using this	Special Instructions at Clinical Low:

calculation. This calculation has been found to be a less reliable way to measure Free T4 compared to simply testing Free T4 directly in blood testing. Lower than optimal Free Thyroxine Index would indicate an underactive or hypo-thyroid function, but this must be compared with other thyroid labs tests to confirm if there is a thyroid problem.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Triiodothyronine (Total T3)	Clinical High	181 or higher								
	Functional High	NA								
	Optimal	99 - 180								
	Functional Low	71 - 98								
	Clinical Low	0 - 70								

Lab Test Explanation for Triiodothyronine (Total T3) at Clinical High: Triiodothyronine (Total T3) Your result for this lab test is in the CLINICAL HIGH range. Triiodothyronine (also called Total T3) exists in your body in either the active form called Free T3, or in the inactive form where T3 is bound to a protein. This test measures the total amount of T3 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Triiodothyronine (Total T3) is in the Clinical High range we would first want to determine if a person has either an overactive or hyper-thyroid function, or if a person is on a thyroid medication that may be at too high of a dose for their body size. It will help to compare this with other thyroid lab tests to confirm hyperthyroidism, and to get a list of medications to see if this abnormal lab result is drug induced. Other factors that may contribute to a higher than optimal Triiodothyronine (Total T3) include: 1) a liver problem, 2) a kidney problem, 3) iodine deficiency, 4) the effect of some medications.	Special Instructions at Clinical High:
Lab Test Explanation for Triiodothyronine (Total T3) at Functional High: Triiodothyronine (Total T3) NA	Special Instructions at Functional High:

Lab Test Explanation for Triiodothyronine (Total T3) at Optimal: Triiodothyronine (Total T3) Your result for this lab test is in the OPTIMAL range. Triiodothyronine (also called Total T3) exists in your body in either the active form called Free T3, or in the inactive form where T3 is bound to a protein. This test measures the total amount of T3 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells.	Special Instructions at Optimal:
Lab Test Explanation for Triiodothyronine (Total T3) at Functional Low: Triiodothyronine (Total T3) Your result for this lab test is in the FUNCTIONAL LOW range. Triiodothyronine (also called Total T3) exists in your body in either the active form called Free T3, or in the inactive form where T3 is bound to a protein. This test measures the total amount of T3 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Triiodothyronine (Total T3) is in the Functional Low range this would indicate a pre-hypothyroid condition. Meaning that it does not meet the clinical definition of hypothyroidism, but a person may still be experiencing symptoms and the effects of lowered thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally. Other factors that may contribute to a lower than optimal Triiodothyronine (Total T3) include: 1) a liver problem, 2) a pituitary problem, 3) a selenium deficiency because selenium is a critical nutrient needed for the conversion of T4 into T3, and 4) the effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for Triiodothyronine (Total T3) at Clinical Low: Triiodothyronine (Total T3) Your result for this lab test is in the CLINICAL LOW range. Triiodothyronine (also called Total T3) exists in your body in either the active form called Free T3, or in the inactive form where T3 is bound to a protein. This test measures the total amount of T3 in your body in both the active and inactive forms. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Triiodothyronine (Total T3) is in the Clinical Low range this would indicate an underactive or hypo-thyroid function. It will help to compare this with other thyroid lab tests to confirm hypothyroidism. Other factors that may contribute to a lower than optimal Triiodothyronine (Total T3) include: 1) a liver problem, 2) a pituitary problem, 3) a selenium deficiency because selenium is a critical nutrient needed for the conversion of T4 into T3, and 4) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Triiodothyronine, Free, Serum (Free T3)	Clinical High	4.5 or higher								
	Functional High	3.9 - 4.4								
	Optimal	2.8 - 3.8								
	Functional Low	2.0 - 2.7								
	Clinical Low	0.0 - 1.9								

Lab Test Explanation for Triiodothyronine, Free, Serum (Free T3) at Clinical High:
Triiodothyronine, Free (Free T3)

Your result for this lab test is in the CLINICAL HIGH range. Triiodothyronine, Free (also called Free T3) measures ONLY the free form of the T3 hormone. In your body T3 exists in both a free or active form, and in an inactive form which is bound to a protein. In the free form it is ready to actively communicate to your cells to affect the function and metabolism of your cells. In the bound form it is inactive and not available until it becomes free. The majority T3 in circulation is in the inactive form with less than 1% in the active or Free T3 form. When stimulated your thyroid produces mostly T4. It's not until T4 gets converted into T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. This conversion of T4 into T3 takes place mostly within the liver, but to a lesser amount in other tissues as well.

When Triiodothyronine, Free (Free T3) is in the Clinical High range we would first want to determine if a person has either an overactive or hyper-thyroid function, or if a person is on a thyroid medication that may be at too high of a dose for their body size. It will help to compare this with other thyroid lab tests to confirm hyperthyroidism, and to get a list of medications to see if this abnormal lab result is drug induced. Other factors that may contribute to a higher than optimal Triiodothyronine, Free (Free T3) include: 1) a liver problem, and 2) the effect of some medications.

Special Instructions at Clinical High:

Lab Test Explanation for Triiodothyronine, Free, Serum (Free T3) at Functional High:
Triiodothyronine, Free (Free T3)

Your result for this lab test is in the FUNCTIONAL HIGH range. Triiodothyronine, Free (also called Free T3) measures ONLY the free form of the T3 hormone. In your body T3 exists in both a free or active form, and in an inactive form which is bound to a protein. In the free form it is ready to actively communicate to your cells to affect the function and metabolism of your cells. In the bound form it is inactive and not available until it becomes free. The majority T3 in circulation is in the inactive form with less than 1% in the active or Free T3 form. When stimulated your thyroid produces mostly T4. It's not until T4 gets converted into T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. This conversion of T4 into T3 takes place mostly within the liver, but to a lesser amount in other tissues as well.

Special Instructions at Functional High:

When Triiodothyronine, Free (Free T3) is in the Functional High range this would indicate a pre-hyperthyroid condition. Meaning that it does not meet the clinical definition of hyperthyroidism, but a person may still be experiencing symptoms and the effects of higher than normal thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally. Other factors that may contribute to a higher than optimal Triiodothyronine, Free (Free T3) include: 1) a liver problem, and 2) the effect of some medications.	
Lab Test Explanation for Triiodothyronine, Free, Serum (Free T3) at Optimal: Triiodothyronine, Free (Free T3) Your result for this lab test is in the OPTIMAL range. Triiodothyronine, Free (also called Free T3) measures ONLY the free form of the T3 hormone. In your body T3 exists in both a free or active form, and in an inactive form which is bound to a protein. In the free form it is ready to actively communicate to your cells to affect the function and metabolism of your cells. In the bound form it is inactive and not available until it becomes free. The majority T3 in circulation is in the inactive form with less than 1% in the active or Free T3 form. When stimulated your thyroid produces mostly T4. It's not until T4 gets converted into T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. This conversion of T4 into T3 takes place mostly within the liver, but to a lesser amount in other tissues as well.	Special Instructions at Optimal:
Lab Test Explanation for Triiodothyronine, Free, Serum (Free T3) at Functional Low: Triiodothyronine, Free (Free T3) Your result for this lab test is in the FUNCTIONAL LOW range. Triiodothyronine, Free (also called Free T3) measures ONLY the free form of the T3 hormone. In your body T3 exists in both a free or active form, and in an inactive form which is bound to a protein. In the free form it is ready to actively communicate to your cells to affect the function and metabolism of your cells. In the bound form it is inactive and not available until it becomes free. The majority T3 in circulation is in the inactive form with less than 1% in the active or Free T3 form. When stimulated your thyroid produces mostly T4. It's not until T4 gets converted into T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. This conversion of T4 into T3 takes place mostly within the liver, but to a lesser amount in other tissues as well. When Triiodothyronine, Free (Free T3) is in the Functional Low range this would indicate a pre-hypothyroid condition. Meaning that it does not meet the clinical definition of hypothyroidism, but a person may still be experiencing symptoms and the effects of lowered thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally. Other factors that may contribute to a lower than optimal Triiodothyronine, Free (Free T3) include: 1) a liver problem, 2) a pituitary problem, 3) a selenium deficiency because selenium is a critical nutrient needed for the conversion of T4 into T3, and 4) the effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for Triiodothyronine, Free, Serum (Free T3) at Clinical Low: Triiodothyronine, Free (Free T3) Your result for this lab test is in the CLINICAL LOW range. Triiodothyronine, Free (also called Free T3) measures ONLY the	Special Instructions at Clinical Low:

free form of the T3 hormone. In your body T3 exists in both a free or active form, and in an inactive form which is bound to a protein. In the free form it is ready to actively communicate to your cells to affect the function and metabolism of your cells. In the bound form it is inactive and not available until it becomes free. The majority T3 in circulation is in the inactive form with less than 1% in the active or Free T3 form. When stimulated your thyroid produces mostly T4. It's not until T4 gets converted into T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. This conversion of T4 into T3 takes place mostly within the liver, but to a lesser amount in other tissues as well.

When Triiodothyronine, Free (Free T3) is in the Clinical Low range this would indicate an underactive or hypo-thyroid function. It will help to compare this with other thyroid lab tests to confirm hypothyroidism. Other factors that may contribute to a lower than optimal Triiodothyronine, Free (Free T3) include: 1) a liver problem, 2) a pituitary problem, 3) a selenium deficiency because selenium is a critical nutrient needed for the conversion of T4 into T3, and 4) the effect of some medications.

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Reverse T3, Serum	Clinical High	24.2 or higher								
	Functional High	20.0 - 24.1								
	Optimal	0.0 - 19.9								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Reverse T3, Serum at Clinical High:
Reverse T3, Serum

Your result for this lab test is in the CLINICAL HIGH range. Reverse T3 is created in the body from T4 as a way to help remove excess amounts T4 out of the body. This conversion of T4 into Reverse T3 takes place mostly within the liver, and Reverse T3 is believed to be biologically inactive. The concern with Reverse T3 is that it has a blocking effect on Free T3. Free T3 is the form of thyroid hormone that is most actively involved in communicating with your cells to improve their metabolism which then determines the metabolism of your entire body. Reverse T3 will prevent Free T3 from communicating with your cells by attaching to and occupying the same locations of the cell that Free T3 would normally bind to (called a receptor site on the cell). This essentially blocks Free T3 from connecting to your cells, and makes the thyroid hormone in your body function less effectively. The end result is that a person can still be suffering with symptoms of low thyroid function, even when TSH, T4 and T3 are within optimal ranges, due to the high levels of Reverse T3. A

Special Instructions at Clinical High:

situation referred to as Reverse T3 Dominance. The two reasons we know of that causes high levels of Reverse T3 are elevated cortisol levels in response to some type of stress, or a deficiency of the mineral Selenium. When Reverse T3 is in the Clinical High range we will first consider if this is due to elevated cortisol levels in response to some type of stress, or if it is due to a Selenium deficiency, or a combination of both. Testing of adrenal function and cortisol levels may be helpful in this situation. Regardless of the cause, your body will usually need additional Selenium to help remove the excess Reverse T3 out of the body.	
Lab Test Explanation for Reverse T3, Serum at Functional High: Reverse T3, Serum Your result for this lab test is in the FUNCTIONAL HIGH range. Reverse T3 is created in the body from T4 as a way to help remove excess amounts T4 out of the body. This conversion of T4 into Reverse T3 takes place mostly within the liver, and Reverse T3 is believed to be biologically inactive. The concern with Reverse T3 is that it has a blocking effect on Free T3. Free T3 is the form of thyroid hormone that is most actively involved in communicating with your cells to improve their metabolism which then determines the metabolism of your entire body. Reverse T3 will prevent Free T3 from communicating with your cells by attaching to and occupying the same locations of the cell that Free T3 would normally bind to (called a receptor site on the cell). This essentially blocks Free T3 from connecting to your cells, and makes the thyroid hormone in your body function less effectively. The end result is that a person can still be suffering with symptoms of low thyroid function, even when TSH, T4 and T3 are within optimal ranges, due to the high levels of Reverse T3. A situation referred to as Reverse T3 Dominance. The two reasons we know of that causes high levels of Reverse T3 are elevated cortisol levels in response to some type of stress, or a deficiency of the mineral Selenium. When Reverse T3 is in the Clinical High range we will first consider if this is due to elevated cortisol levels in response to some type of stress, or if it is due to a Selenium deficiency, or a combination of both. Testing of adrenal function and cortisol levels may be helpful in this situation. Regardless of the cause, your body will usually need additional Selenium to help remove the excess Reverse T3 out of the body.	Special Instructions at Functional High:
Lab Test Explanation for Reverse T3, Serum at Optimal: Reverse T3, Serum Your result for this lab test is in the OPTIMAL range. Reverse T3 is created in the body from T4 as a way to help remove excess amounts T4 out of the body. This conversion of T4 into Reverse T3 takes place mostly within the liver, and Reverse T3 is believed to be biologically inactive. The concern with Reverse T3 is that it has a blocking effect on Free T3. Free T3 is the form of thyroid hormone that is most actively involved in communicating with your cells to improve their metabolism which then determines the metabolism of your entire body. Reverse T3 will prevent Free T3 from communicating with your cells by attaching to and occupying the same locations of the cell that Free T3 would normally bind to (called a receptor site on the cell). This essentially blocks Free T3 from connecting to your cells, and makes the thyroid hormone in your body function less effectively. The end result is that a person can still be suffering with symptoms of low thyroid function, even when TSH, T4 and T3 are within optimal ranges, due to the high levels of Reverse T3. A situation referred to	Special Instructions at Optimal:

as Reverse T3 Dominance. The two reasons we know of that causes high levels of Reverse T3 are elevated cortisol levels in response to some type of stress, or a deficiency of the mineral Selenium.	
Lab Test Explanation for Reverse T3, Serum at Functional Low: Reverse T3, Serum NA	Special Instructions at Functional Low:
Lab Test Explanation for Reverse T3, Serum at Clinical Low: Reverse T3, Serum NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
T4, Free (Direct)	Clinical High	1.78 or higher								
	Functional High	1.57 - 1.77								
	Optimal	1.03 - 1.56								
	Functional Low	0.82 - 1.02								
	Clinical Low	0.00 - 0.81								

Lab Test Explanation for T4, Free (Direct) at Clinical High: T4, Free (Direct) Your result for this lab test is in the CLINICAL HIGH range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of Free T4 in your body in only the active or free form of the hormone. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Free T4 is in the Clinical High range we would first want to determine if a person has either an overactive or hyper-thyroid function, or if a person is on a thyroid medication that may be at too high of a dose for their body size. It will help to compare this with other thyroid lab tests to confirm hyperthyroidism, and to get a list of medications to see if this	Special Instructions at Clinical High:

abnormal lab result is drug induced.	
Lab Test Explanation for T4, Free (Direct) at Functional High: T4, Free (Direct) Your result for this lab test is in the FUNCTIONAL HIGH range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of Free T4 in your body in only the active or free form of the hormone. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Free T4 is in the Functional High range this would indicate a pre-hyperthyroid condition. Meaning that it does not meet the clinical definition of hyperthyroidism, but a person may still be experiencing symptoms and the effects of higher than normal thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally.	Special Instructions at Functional High:
Lab Test Explanation for T4, Free (Direct) at Optimal: T4, Free (Direct) Your result for this lab test is in the OPTIMAL range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of Free T4 in your body in only the active or free form of the hormone. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells.	Special Instructions at Optimal:
Lab Test Explanation for T4, Free (Direct) at Functional Low: T4, Free (Direct) Your result for this lab test is in the FUNCTIONAL LOW range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of Free T4 in your body in only the active or free form of the hormone. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Free T4 is in the Functional Low range this would indicate a pre-hypothyroid condition. Meaning that it does not meet the clinical definition of hypothyroidism, but a person may still be experiencing symptoms and the effects of lowered	Special Instructions at Functional Low:

thyroid function. It will help to compare this with other thyroid lab tests to confirm if the thyroid is struggling to function optimally.	
Lab Test Explanation for T4, Free (Direct) at Clinical Low: T4, Free (Direct) Your result for this lab test is in the CLINICAL LOW range. Thyroxine (also called T4) exists in your body in either the active form called Free T4, or in the inactive form where T4 is bound to a protein. This test measures the total amount of Free T4 in your body in only the active or free form of the hormone. When stimulated your thyroid produces thyroid hormone mostly in the form of T4 which has little biological activity or effect on your cells. It's not until T4 gets converted to T3 in other areas of the body that your thyroid hormone will have its primary effect on the metabolism and function of your cells. When Free T4 is in the Clinical Low range we would first want to determine if a person has an underactive or hypo-thyroid function. It will help to compare this with other thyroid lab tests to confirm hypothyroidism. Other factors that may contribute to a lower than optimal Thyroxine (Total T4) include: 1) a person taking a T3 thyroid medication may suppress Total T4, and 2) a pituitary problem.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Thyroid Peroxidase (TPO) Ab	Clinical High	35 or higher								
	Functional High	20 - 34								
	Optimal	0 - 19								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Thyroid Peroxidase (TPO) Ab at Clinical High: Thyroid Peroxidase (TPO) Ab Your result for this lab test is in the CLINICAL HIGH range. Thyroid Peroxidase (TPO) is an enzyme that helps to bring iodine into the cells of the thyroid which is then used to make the thyroid hormones we refer to as T3 and T4. This lab test is measuring the antibody levels that have been created by your immune system to attack and destroy this Thyroid Peroxidase enzyme. This is an abnormal immune system reaction, and is usually referred to as an auto-immune reaction. The TPO antibody test is one way to measure if a person's abnormal thyroid function is (in part) due to an auto-immune	Special Instructions at Clinical High:

condition. When Thyroid Peroxidase (TPO) Antibody is in the Clinical High range we will conclude that you have an auto-immune thyroid condition. The higher the number for this antibody test . . . the more aggressive the auto-immune reaction is.	
Lab Test Explanation for Thyroid Peroxidase (TPO) Ab at Functional High: Thyroid Peroxidase (TPO) Ab Your result for this lab test is in the FUNCTIONAL HIGH range. Thyroid Peroxidase (TPO) is an enzyme that helps to bring iodine into the cells of the thyroid which is then used to make the thyroid hormones we refer to as T3 and T4. This lab test is measuring the antibody levels that have been created by your immune system to attack and destroy this Thyroid Peroxidase enzyme. This is an abnormal immune system reaction, and is usually referred to as an auto-immune reaction. The TPO antibody test is one way to measure if a person's abnormal thyroid function is (in part) due to an auto-immune condition. When Thyroid Peroxidase (TPO) Antibody is in the Functional High range we will conclude that you have the tendency to develop an auto-immune thyroid condition, but the antibody levels are not yet high enough to be clinically diagnosed as an auto-immune thyroid condition.	Special Instructions at Functional High:
Lab Test Explanation for Thyroid Peroxidase (TPO) Ab at Optimal: Thyroid Peroxidase (TPO) Ab Your result for this lab test is in the OPTIMAL range. Thyroid Peroxidase (TPO) is an enzyme that helps to bring iodine into the cells of the thyroid which is then used to make the thyroid hormones we refer to as T3 and T4. This lab test is measuring the antibody levels that have been created by your immune system to attack and destroy this Thyroid Peroxidase enzyme. This is an abnormal immune system reaction, and is usually referred to as an auto-immune reaction. The TPO antibody test is one way to measure if a person's abnormal thyroid function is (in part) due to an auto-immune condition.	Special Instructions at Optimal:
Lab Test Explanation for Thyroid Peroxidase (TPO) Ab at Functional Low: Thyroid Peroxidase (TPO) Ab NA	Special Instructions at Functional Low:
Lab Test Explanation for Thyroid Peroxidase (TPO) Ab at Clinical Low: Thyroid Peroxidase (TPO) Ab NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Thyroglobulin Antibody	Clinical High	1.0 or higher								
	Functional High	NA								
	Optimal	0.0 - 0.9								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Thyroglobulin Antibody at Clinical High:
Thyroglobulin Antibody

Your result for this lab test is in the CLINICAL HIGH range. Thyroglobulin is a protein produced and used within the thyroid gland, and it is used in the creation of the thyroid hormones T3 and T4. This lab test is measuring the antibody levels that have been created by your immune system to attack and destroy this protein called Thyroglobulin. This is an abnormal immune system reaction, and is usually referred to as an auto-immune reaction. The Thyroglobulin Antibody test is one way to measure if a person's abnormal thyroid function is (in part) due to an auto-immune condition. When Thyroglobulin Antibody is in the Clinical High range we will conclude that you have an auto-immune thyroid condition. The higher the number for this antibody test . . . the more aggressive the auto-immune reaction is.

Special Instructions at Clinical High:

Lab Test Explanation for Thyroglobulin Antibody at Functional High:
Thyroglobulin Antibody

NA

Special Instructions at Functional High:

Lab Test Explanation for Thyroglobulin Antibody at Optimal:
Thyroglobulin Antibody

Your result for this lab test is in the OPTIMAL range. Thyroglobulin is a protein produced and used within the thyroid gland, and it is used in the creation of the thyroid hormones T3 and T4. This lab test is measuring the antibody levels that have been created by your immune system to attack and destroy this protein called Thyroglobulin. This is an abnormal immune system reaction, and is usually referred to as an auto-immune reaction. The Thyroglobulin Antibody test is one way to measure if a person's abnormal thyroid function is (in part) due to an auto-immune condition.

Special Instructions at Optimal:

Lab Test Explanation for Thyroglobulin Antibody at Functional Low:
Thyroglobulin Antibody

NA

Special Instructions at Functional Low:

Lab Test Explanation for Thyroglobulin Antibody at Clinical Low:	Special Instructions at Clinical Low:
Thyroglobulin Antibody NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Vitamin D, 25-Hydroxy	Clinical High	100.1 or higher								
	Functional High	80.1 - 100.0								
	Optimal	60.0 - 80.0								
	Functional Low	30.0 - 59.9								
	Clinical Low	0.0 - 29.9								

Lab Test Explanation for Vitamin D, 25 Hydroxy at Clinical High:	Special Instructions at Clinical High:
Vitamin D, 25-Hydroxy Your result for this lab test is in the CLINICAL HIGH range. Vitamin D is one of the most heavily research of all the individual vitamins and minerals for many years. Although it is referred to as a vitamin . . . the active form of Vitamin D functions in many ways like a hormone in the way it communicates and controls the function of your cells. The benefits of Vitamin D include: 1) improving blood sugar control because your pancreas needs Vitamin D in the manufacture of insulin, 2) improving the balance of brain chemistry, 3) improving the balance of female and male hormones, 4) improving energy levels - some people have noticed an increase in energy after taking the proper therapeutic dose of Vitamin D3 based on the results of lab testing, 5) improved immune function - fewer colds and flu, 6) improving bone density by helping to bring digested calcium into the blood so it can then be incorporated into bone tissue, and 7) the ability to reduce an auto-immune reaction within the body. One of the most important benefits of Vitamin D is the cancer-protective effect it has on your cells. Vitamin D helps to prevent the proliferation (or abnormal growth) of cells within your body . . . and this is really what most cancers are . . . cells that are growing in an abnormal and uncontrolled way. The effect of Vitamin D to help suppress the growth of abnormal cells is powerful enough to make this an important consideration in cancer prevention, and in making your cells healthy again once cancer has become establish within the body. Vitamin D3 is the active or bioavailable form of Vitamin D, and is the preferred form when taken as a supplement. This is	

the form of Vitamin D your body produces when your skin is exposed to sunlight. Care should be taken to let lab testing guide your daily dose of Vitamin D3 when taking it by supplement. Taking too much Vitamin D can become harmful if taken in excess for a longer period of time, and taking too small of a dose may have little to no benefit. Also, some people seem to improve and retain their Vitamin D levels better than others, so a recommended dose of Vitamin D3 can vary quite a bit from one person to another and should be determined based on the results of lab testing. Vitamin D in the Clinical High range is rare to see, and is most likely due to taking too high of a dose of Vitamin D by supplement.	
Lab Test Explanation for Vitamin D, 25 Hydroxy at Functional High: Vitamin D, 25-Hydroxy Your result for this lab test is in the FUNCTIONAL HIGH range. Vitamin D is one of the most heavily research of all the individual vitamins and minerals for many years. Although it is referred to as a vitamin . . . the active form of Vitamin D functions in many ways like a hormone in the way it communicates and controls the function of your cells. The benefits of Vitamin D include: 1) improving blood sugar control because your pancreas needs Vitamin D in the manufacture of insulin, 2) improving the balance of brain chemistry, 3) improving the balance of female and male hormones, 4) improving energy levels - some people have noticed an increase in energy after taking the proper therapeutic dose of Vitamin D3 based on the results of lab testing, 5) improved immune function - fewer colds and flu, 6) improving bone density by helping to bring digested calcium into the blood so it can then be incorporated into bone tissue, and 7) the ability to reduce an auto-immune reaction within the body. One of the most important benefits of Vitamin D is the cancer-protective effect it has on your cells. Vitamin D helps to prevent the proliferation (or abnormal growth) of cells within your body . . . and this is really what most cancers are . . . cells that are growing in an abnormal and uncontrolled way. The effect of Vitamin D to help suppress the growth of abnormal cells is powerful enough to make this an important consideration in cancer prevention, and in making your cells healthy again once cancer has become establish within the body. Vitamin D3 is the active or bioavailable form of Vitamin D, and is the preferred form when taken as a supplement. This is the form of Vitamin D your body produces when your skin is exposed to sunlight. Care should be taken to let lab testing guide your daily dose of Vitamin D3 when taking it by supplement. Taking too much Vitamin D can become harmful if taken in excess for a longer period of time, and taking too small of a dose may have little to no benefit. Also, some people seem to improve and retain their Vitamin D levels better than others, so a recommended dose of Vitamin D3 can vary quite a bit from one person to another and should be determined based on the results of lab testing for Vitamin D. Vitamin D in the Functional High range is meaning that levels are slightly higher than optimal, and most likely due to supplement intake of Vitamin D. The Functional High range may in fact be the therapeutic goal for some doctors and health providers who are working with patients with more severe health conditions such as cancer and autoimmune disease.	Special Instructions at Functional High:

Lab Test Explanation for Vitamin D, 25 Hydroxy at Optimal:	Special Instructions at Optimal:
Vitamin D, 25-Hydroxy Your result for this lab test is in the OPTIMAL range. Vitamin D is one of the most heavily research of all the individual vitamins and minerals for many years. Although it is referred to as a vitamin . . . the active form of Vitamin D functions in many ways like a hormone in the way it communicates and controls the function of your cells. The benefits of Vitamin D include: 1) improving blood sugar control because your pancreas needs Vitamin D in the manufacture of insulin, 2) improving the balance of brain chemistry, 3) improving the balance of female and male hormones, 4) improving energy levels - some people have noticed an increase in energy after taking the proper therapeutic dose of Vitamin D3 based on the results of lab testing, 5) improved immune function - fewer colds and flu, 6) improving bone density by helping to bring digested calcium into the blood so it can then be incorporated into bone tissue, and 7) the ability to reduce an auto-immune reaction within the body. One of the most important benefits of Vitamin D is the cancer-protective effect it has on your cells. Vitamin D helps to prevent the proliferation (or abnormal growth) of cells within your body . . . and this is really what most cancers are . . . cells that are growing in an abnormal and uncontrolled way. The effect of Vitamin D to help suppress the growth of abnormal cells is powerful enough to make this an important consideration in cancer prevention, and in making your cells healthy again once cancer has become establish within the body. Vitamin D3 is the active or bioavailable form of Vitamin D, and is the preferred form when taken as a supplement. This is the form of Vitamin D your body produces when your skin is exposed to sunlight. Care should be taken to let lab testing guide your daily dose of Vitamin D3 when taking it by supplement. Taking too much Vitamin D can become harmful if taken in excess for a longer period of time, and taking too small of a dose may have little to no benefit. Also, some people seem to improve and retain their Vitamin D levels better than others, so a recommended dose of Vitamin D3 can vary quite a bit from one person to another and should be determined based on the results of lab testing for Vitamin D. Keeping Vitamin D in the Optimal range where you will see the majority of health benefits that Vitamin D has to offer for improving and maintaining good health.	
Lab Test Explanation for Vitamin D, 25 Hydroxy at Functional Low:	Special Instructions at Functional Low:
Vitamin D, 25-Hydroxy Your result for this lab test is in the FUNCTIONAL LOW range. Vitamin D is one of the most heavily research of all the individual vitamins and minerals for many years. Although it is referred to as a vitamin . . . the active form of Vitamin D functions in many ways like a hormone in the way it communicates and controls the function of your cells. The benefits of Vitamin D include: 1) improving blood sugar control because your pancreas needs Vitamin D in the manufacture of insulin, 2) improving the balance of brain chemistry, 3) improving the balance of female and male hormones, 4) improving energy levels - some people have noticed an increase in energy after taking the proper therapeutic dose of Vitamin D3 based on the results of lab testing, 5) improved immune function - fewer colds and flu, 6) improving bone density by helping to bring digested calcium into the blood so it can then be incorporated into bone tissue, and 7) the ability to reduce an auto-	**D3 5000:** When taking Vitamin D3 at a higher therapeutic dose one should be careful to only take it at this higher dose for the length of time recommended by your health provider, and do follow-up lab testing within a few months to determine the on-going need for Vitamin D3.

immune reaction within the body. One of the most important benefits of Vitamin D is the cancer-protective effect it has on your cells. Vitamin D helps to prevent the proliferation (or abnormal growth) of cells within your body . . . and this is really what most cancers are . . . cells that are growing in an abnormal and uncontrolled way. The effect of Vitamin D to help suppress the growth of abnormal cells is powerful enough to make this an important consideration in cancer prevention, and in making your cells healthy again once cancer has become establish within the body. Vitamin D3 is the active or bioavailable form of Vitamin D, and is the preferred form when taken as a supplement. This is the form of Vitamin D your body produces when your skin is exposed to sunlight. Care should be taken to let lab testing guide your daily dose of Vitamin D3 when taking it by supplement. Taking too much Vitamin D can become harmful if taken in excess for a longer period of time, and taking too small of a dose may have little to no benefit. Also, some people seem to improve and retain their Vitamin D levels better than others, so a recommended dose of Vitamin D3 can vary quite a bit from one person to another and should be determined based on the results of lab testing for Vitamin D. When Vitamin D is in the Functional Low range this usually means that a person is not receiving enough sunlight exposure to their skin, or they are not getting enough through foods that are fortified with Vitamin D. Since the cancer protective and many other health benefits of Vitamin D are realized when it is in the Optimal range . . . taking Vitamin D3 in supplement form would be appropriate to increase your levels. Follow-up lab testing of Vitamin D is recommended to make sure levels have improved, and to make sure your Vitamin D levels have not gone too high.	
Lab Test Explanation for Vitamin D, 25 Hydroxy at Clinical Low: Vitamin D, 25-Hydroxy Your result for this lab test is in the CLINICAL LOW range. Vitamin D is one of the most heavily research of all the individual vitamins and minerals for many years. Although it is referred to as a vitamin . . . the active form of Vitamin D functions in many ways like a hormone in the way it communicates and controls the function of your cells. The benefits of Vitamin D include: 1) improving blood sugar control because your pancreas needs Vitamin D in the manufacture of insulin, 2) improving the balance of brain chemistry, 3) improving the balance of female and male hormones, 4) improving energy levels - some people have noticed an increase in energy after taking the proper therapeutic dose of Vitamin D3 based on the results of lab testing, 5) improved immune function - fewer colds and flu, 6) improving bone density by helping to bring digested calcium into the blood so it can then be incorporated into bone tissue, and 7) the ability to reduce an auto-immune reaction within the body. One of the most important benefits of Vitamin D is the cancer-protective effect it has on your cells. Vitamin D helps to prevent the proliferation (or abnormal growth) of cells within your body . . . and this is really what most cancers are . . . cells that are growing in an abnormal and uncontrolled way. The effect of Vitamin D to help suppress the growth of abnormal cells is powerful enough to make this an important consideration in cancer prevention, and in making your cells healthy again once cancer has become establish within the body.	Special Instructions at Clinical Low: **D3 5000:** When taking Vitamin D3 at a higher therapeutic dose one should be careful to only take it at this higher dose for the length of time recommended by your health provider, and do follow-up lab testing within a few months to determine the on-going need for Vitamin D3.

Vitamin D3 is the active or bioavailable form of Vitamin D, and is the preferred form when taken as a supplement. This is the form of Vitamin D your body produces when your skin is exposed to sunlight. Care should be taken to let lab testing guide your daily dose of Vitamin D3 when taking it by supplement. Taking too much Vitamin D can become harmful if taken in excess for a longer period of time, and taking too small of a dose may have little to no benefit. Also, some people seem to improve and retain their Vitamin D levels better than others, so a recommended dose of Vitamin D3 can vary quite a bit from one person to another and should be determined based on the results of lab testing for Vitamin D.

When Vitamin D is in the Clinical Low range this usually means that a person is not receiving enough sunlight exposure to their skin, or they are not getting enough through foods that are fortified with Vitamin D. Since the cancer protective and many other health benefits of Vitamin D are realized when it is in the Optimal range . . . taking Vitamin D3 in supplement form would be appropriate to increase your levels. Follow-up lab testing of Vitamin D is recommended to make sure levels have improved, and to make sure your Vitamin D levels have not gone too high.

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Fibrinogen Activity	Clinical High	508 or higher								
	Functional High	400 - 507								
	Optimal	193 - 399								
	Functional Low	NA								
	Clinical Low	0 - 192								

Lab Test Explanation for Fibrinogen Activity at Clinical High:
Fibrinogen Activity

Your result for this lab test is in the CLINICAL HIGH range. Fibrinogen is a protein produced by your liver that is involved in a complex series of reactions to help you form a blood clot when you are bleeding - called a coagulation cascade. Fibrinogen also affects the thickness or viscosity of your blood, and is a key factor in the formation of plaque in your arteries. The Fibrinogen Activity test does NOT measure the amount of Fibrinogen in your blood. Instead it measures the activity or function of Fibrinogen and its ability to help you form a blood clot. High Fibrinogen levels can mean that blood clots are forming too easily. This can result in cardiovascular problems if these blood clots are forming in blood vessels interfering with blood flow, and can contribute to a blockage of blood vessels leading to heart attack and stroke. Low Fibrinogen levels can mean that you may have difficulty forming clots normally when needed to effectively stop bleeding.

Special Instructions at Clinical High:

When Fibrinogen Activity is in the Clinical High range we conclude that blood clots may be forming too easily within your blood vessels and you are at a higher risk of damage to your cardiovascular system. Your overall cardiovascular risk can be estimated when comparing this result with other cardiovascular risk measurements such as: 1) Cholesterol levels including HDL, LDL and Chol/HDL Ratio, 2) Homocysteine, and 3) inflammatory markers such as C-Reactive Protein. The greater the number of cardiovascular risk measurements that are abnormal . . . the greater the possibility of having a cardiovascular problem or cardiovascular event - such as heart attack or stroke - later in life. Fibrinogen levels can increase quickly in any condition that causes inflammation or tissue damage. Moderate elevations of Fibrinogen can be seen with pregnancy, cigarette smoking, and with oral contraceptive use or estrogen use.	
Lab Test Explanation for Fibrinogen Activity at Functional High: Fibrinogen Activity Your result for this lab test is in the FUNCTIONAL HIGH range. Fibrinogen is a protein produced by your liver that is involved in a complex series of reactions to help you form a blood clot when you are bleeding - called a coagulation cascade. Fibrinogen also affects the thickness or viscosity of your blood, and is a key factor in the formation of plaque in your arteries. The Fibrinogen Activity test does NOT measure the amount of Fibrinogen in your blood. Instead it measures the activity or function of Fibrinogen and its ability to help you form a blood clot. High Fibrinogen levels can mean that blood clots are forming too easily. This can result in cardiovascular problems if these blood clots are forming in blood vessels interfering with blood flow, and can contribute to a blockage of blood vessels leading to heart attack and stroke. Low Fibrinogen levels can mean that you may have difficulty forming clots normally when needed to effectively stop bleeding. When Fibrinogen Activity is in the Functional High range we conclude that you are at a slightly higher risk of blood clots forming too easily within your blood vessels which can lead to damage to your cardiovascular system. Your overall cardiovascular risk can be estimated when comparing this result with other cardiovascular risk measurements such as: 1) Cholesterol levels including HDL, LDL and Chol/HDL Ratio, 2) Homocysteine, and 3) inflammatory markers such as C-Reactive Protein. The greater the number of cardiovascular risk measurements that are abnormal . . . the greater the possibility of having a cardiovascular problem or cardiovascular event - such as heart attack or stroke - later in life. Fibrinogen levels can increase quickly in any condition that causes inflammation or tissue damage. Moderate elevations of Fibrinogen can be seen with pregnancy, cigarette smoking, and with oral contraceptive use or estrogen use.	Special Instructions at Functional High:
Lab Test Explanation for Fibrinogen Activity at Optimal: Fibrinogen Activity Your result for this lab test is in the OPTIMAL range. Fibrinogen is a protein produced by your liver that is involved in a complex series of reactions to help you form a blood clot when you are bleeding - called a coagulation cascade. Fibrinogen also affects the thickness or viscosity of your blood, and is a key factor in the formation of plaque in your arteries. The Fibrinogen Activity test does NOT measure the amount of Fibrinogen in your blood. Instead it measures the activity or function of Fibrinogen and its ability to help you form a blood clot. High Fibrinogen levels can mean that blood clots are forming too easily. This can result in cardiovascular problems if these blood clots are forming in blood vessels interfering	Special Instructions at Optimal:

with blood flow, and can contribute to a blockage of blood vessels leading to heart attack and stroke. Low Fibrinogen levels can mean that you may have difficulty forming clots normally when needed to effectively stop bleeding.	
Lab Test Explanation for Fibrinogen Activity at Functional Low: Fibrinogen Activity NA	Special Instructions at Functional Low:
Lab Test Explanation for Fibrinogen Activity at Clinical Low: Fibrinogen Activity Your result for this lab test is in the CLINICAL LOW range. Fibrinogen is a protein produced by your liver that is involved in a complex series of reactions to help you form a blood clot when you are bleeding - called a coagulation cascade. Fibrinogen also affects the thickness or viscosity of your blood, and is a key factor in the formation of plaque in your arteries. The Fibrinogen Activity test does NOT measure the amount of Fibrinogen in your blood. Instead it measures the activity or function of Fibrinogen and its ability to help you form a blood clot. High Fibrinogen levels can mean that blood clots are forming too easily. This can result in cardiovascular problems if these blood clots are forming in blood vessels interfering with blood flow, and can contribute to a blockage of blood vessels leading to heart attack and stroke. Low Fibrinogen levels can mean that you may have difficulty forming clots normally when needed to effectively stop bleeding. When Fibrinogen Activity is in the Clinical Low range we conclude that blood clots may have difficulty forming when needed to properly stop bleeding. Because Fibrinogen is a protein produced in your liver, we should be looking at liver function blood tests to see if poor liver function could be contributing to poor Fibrinogen function. Lower Fibrinogen levels or function could also be due to: 1) a genetic condition, 2) an auto-immune condition, 3) severe malnutrition, and 4) the effect of some medications. If a bleeding disorder is suspected then additional testing of blood clotting factors should be considered, or a referral to blood specialist should be recommended to help determine the origin of poor blood clotting or poor Fibrinogen function.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
WBC	Clinical High	10.9 or higher								
	Functional High	7.6 - 10.8								
	Optimal	4.5 - 7.5								
	Functional Low	3.4 - 4.4								
	Clinical Low	0.0 - 3.3								

Lab Test Explanation for WBC at Clinical High:
WBC

Your result for this lab test is in the CLINICAL HIGH range. This test is measuring the total number of White Blood Cells (WBC) circulating in your blood. White Blood Cells are important part of your immune system, and help to protect your body against invading organisms such as bacteria, viruses, parasites and fungal issues. White Blood Cells are also involved in inflammation, auto-immune conditions, how your body responds to allergies, and as part of your body's defense against cancer.

Your bone marrow will produce additional White Blood Cells and release them into your blood stream when there is an infection or inflammatory process within your body. We typically associate a high WBC count with a more recent or acute infection or process within the body, and a low WBC count with a more chronic or long-term infection or process. The WBC count can also falsely appear to be normal as an infection process is transitioning from an acute to chronic phase, or when a chronic infection is aggravated and reactivated back to a more severe or acute situation.

The total WBC count should be reviewed in relation to the different types of White Blood Cells which are Neutrophils, Lymphocytes, Monocytes, Eosinophils and Basophils as part of a WBC differential test to locate the source of an increased or decreased WBC count. Although less common . . . the production of White Blood Cells and the WBC count can also be affected by immune system disorders, cancers, and other conditions that affect the function of bone marrow.

When your WBC count is in the Clinical High range it will most likely be due to a recent or acute infection process within your body. This could also be due to a chronic infection that has become worse and reactivated back to a more severe or acute situation. You will want to look at the different types of White Blood Cells to help determine the type of infection. Other factors that can contribute to a high WBC count are: 1) adrenal problems, 2) allergies or asthma, 3) inflammatory process or inflammatory conditions such as an auto-immune condition, 4) severe tissue injury or tissue death, 5) a disorder of the bone marrow resulting in too many White Blood Cells getting produced, or 6) abnormal cell growth resulting in cancer, neoplasm, or Leukemia.

Special Instructions at Clinical High:

Lab Test Explanation for WBC at Functional High: WBC Your result for this lab test is in the FUNCTIONAL HIGH range. This test is measuring the total number of White Blood Cells (WBC) circulating in your blood. White Blood Cells are important part of your immune system, and help to protect your body against invading organisms such as bacteria, viruses, parasites and fungal issues. White Blood Cells are also involved in inflammation, auto-immune conditions, how your body responds to allergies, and as part of your body's defense against cancer. Your bone marrow will produce additional White Blood Cells and release them into your blood stream when there is an infection or inflammatory process within your body. We typically associate a high WBC count with a more recent or acute infection or process within the body, and a low WBC count with a more chronic or long-term infection or process. The WBC count can also falsely appear to be normal as an infection process is transitioning from an acute to chronic phase, or when a chronic infection is aggravated and reactivated back to a more severe or acute situation. The total WBC count should be reviewed in relation to the different types of White Blood Cells which are Neutrophils, Lymphocytes, Monocytes, Eosinophils and Basophils as part of a WBC differential test to locate the source of an increased or decreased WBC count. Although less common . . . the production of White Blood Cells and the WBC count can also be affected by immune system disorders, cancers, and other conditions that affect the function of bone marrow. When your WBC count is in the Functional High range we will first consider if there is a more recent or acute infection process developing within the body. This could also be due to a chronic infection that has become worse and reactivated back to a more severe or acute situation. You will want to look at the different types of White Blood Cells to help determine the type of infection. Other factors that can contribute to a high WBC count are: 1) adrenal problems, 2) allergies or asthma, 3) inflammatory process or inflammatory conditions such as an auto-immune condition, 4) severe tissue injury or tissue death, 5) a disorder of the bone marrow resulting in too many White Blood Cells getting produced, or 6) abnormal cell growth resulting in cancer, neoplasm, or Leukemia.	Special Instructions at Functional High:
Lab Test Explanation for WBC at Optimal: WBC Your result for this lab test is in the OPTIMAL range. This test is measuring the total number of White Blood Cells (WBC) circulating in your blood. White Blood Cells are important part of your immune system, and help to protect your body against invading organisms such as bacteria, viruses, parasites and fungal issues. White Blood Cells are also involved in inflammation, auto-immune conditions, how your body responds to allergies, and as part of your body's defense against cancer. Your bone marrow will produce additional White Blood Cells and release them into your blood stream when there is an infection or inflammatory process within your body. We typically associate a high WBC count with a more recent or acute	Special Instructions at Optimal:

infection or process within the body, and a low WBC count with a more chronic or long-term infection or process. The WBC count can also falsely appear to be normal as an infection process is transitioning from an acute to chronic phase, or when a chronic infection is aggravated and reactivated back to a more severe or acute situation. The total WBC count should be reviewed in relation to the different types of White Blood Cells which are Neutrophils, Lymphocytes, Monocytes, Eosinophils and Basophils as part of a WBC differential test to locate the source of an increased or decreased WBC count. Although less common . . . the production of White Blood Cells and the WBC count can also be affected by immune system disorders, cancers, and other conditions that affect the function of bone marrow.	
Lab Test Explanation for WBC at Functional Low: WBC Your result for this lab test is in the FUNCTIONAL LOW range. This test is measuring the total number of White Blood Cells (WBC) circulating in your blood. White Blood Cells are important part of your immune system, and help to protect your body against invading organisms such as bacteria, viruses, parasites and fungal issues. White Blood Cells are also involved in inflammation, auto-immune conditions, how your body responds to allergies, and as part of your body's defense against cancer. Your bone marrow will produce additional White Blood Cells and release them into your blood stream when there is an infection or inflammatory process within your body. We typically associate a high WBC count with a more recent or acute infection or process within the body, and a low WBC count with a more chronic or long-term infection or process. The WBC count can also falsely appear to be normal as an infection process is transitioning from an acute to chronic phase, or when a chronic infection is aggravated and reactivated back to a more severe or acute situation. The total WBC count should be reviewed in relation to the different types of White Blood Cells which are Neutrophils, Lymphocytes, Monocytes, Eosinophils and Basophils as part of a WBC differential test to locate the source of an increased or decreased WBC count. Although less common . . . the production of White Blood Cells and the WBC count can also be affected by immune system disorders, cancers, and other conditions that affect the function of bone marrow. When your WBC count is in the Functional Low range we will first consider if there is a long-term or chronic infection process developing within your body. You will want to look at the different types of White Blood Cells to help determine the type of infection. Other factors that can contribute to a low WBC count are: 1) an auto-immune condition, 2) multiple food allergies, 3) adrenal problems, 4) nutritional deficiency to include B12, B6 or Folic Acid, 5) a liver problem or toxic overload of the body, 6) overactive or hyper-parathyroid function, 7) a disorder of the bone marrow resulting in too few White Blood Cells getting produced, 8) abnormal cell growth resulting in cancer or neoplasm, or 9) the effect of some medications.	Special Instructions at Functional Low:

Lab Test Explanation for WBC at Clinical Low:	Special Instructions at Clinical Low:
WBC Your result for this lab test is in the CLINICAL LOW range. This test is measuring the total number of White Blood Cells (WBC) circulating in your blood. White Blood Cells are important part of your immune system, and help to protect your body against invading organisms such as bacteria, viruses, parasites and fungal issues. White Blood Cells are also involved in inflammation, auto-immune conditions, how your body responds to allergies, and as part of your body's defense against cancer. Your bone marrow will produce additional White Blood Cells and release them into your blood stream when there is an infection or inflammatory process within your body. We typically associate a high WBC count with a more recent or acute infection or process within the body, and a low WBC count with a more chronic or long-term infection or process. The WBC count can also falsely appear to be normal as an infection process is transitioning from an acute to chronic phase, or when a chronic infection is aggravated and reactivated back to a more severe or acute situation. The total WBC count should be reviewed in relation to the different types of White Blood Cells which are Neutrophils, Lymphocytes, Monocytes, Eosinophils and Basophils as part of a WBC differential test to locate the source of an increased or decreased WBC count. Although less common . . . the production of White Blood Cells and the WBC count can also be affected by immune system disorders, cancers, and other conditions that affect the function of bone marrow. When your WBC count is in the Clinical Low range it will most likely be due to a long-term or chronic infection process within your body. You will want to look at the different types of White Blood Cells to help determine the type of infection. Other factors that can contribute to a low WBC count are: 1) an auto-immune condition, 2) multiple food allergies, 3) adrenal problems, 4) nutritional deficiency to include B12, B6 or Folic Acid, 5) a liver problem or toxic overload of the body, 6) overactive or hyper-parathyroid function, 7) a disorder of the bone marrow resulting in too few White Blood Cells getting produced, 8) abnormal cell growth resulting in cancer or neoplasm, or 9) the effect of some medications.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
RBC	Clinical High	5.29 or higher								
	Functional High	4.71 - 5.28								
	Optimal	4.10 - 4.70								
	Functional Low	3.77 - 4.09								
	Clinical Low	0.00 - 3.76								

Lab Test Explanation for RBC at Clinical High:
RBC

Your result for this lab test is in the CLINICAL HIGH range. This test is measuring the total number of Red Blood Cells (RBC) within a certain area or amount of blood during microscopic examination. Your Red Blood Cells are primarily responsible for picking up oxygen in your lungs, and transporting that oxygen to all the tissues of your body (with the help of hemoglobin located within the RBC). Your Red Blood Cells also have the important task of removing some carbon dioxide as a waste product of cell function, and transporting carbon dioxide back to the lungs so it can be removed from your body when you exhale during breathing.

Red Blood Cells are produced in your bone marrow, and the average lifespan of a Red Blood Cell is about 120 days. This means that as old Red Blood Cells are removed from your body they need to be continually replaced with new ones. If your bone marrow is not able to produce enough Red Blood Cells due to some type of deficiency or disease process, or if a person is losing blood (bleeding) causing a decrease in the number of Red Blood Cells within the body . . . this is called "Anemia". Seeing only the RBC count at levels that are too low would likely result in a clinical diagnosis of Anemia, but this should still be correlated with other lab tests to measure the health and function of your Red Blood Cells to help determine the possible cause of Anemia. These other lab tests would include: Hemoglobin, Hematocrit, MCV, MCH, MCHC, RDW, and measurements of iron levels in the body.

When your Red Blood Cell count is in the Clinical High range we will first need to determine if this is due to a situation where there is less oxygen getting into the body, if a person is dehydrated, or if there is a disease process resulting in the bone marrow producing too many Red Blood Cells. One reason for less oxygen getting into the body would be some type of respiratory (lung) condition or heart condition which is decreasing the amount of oxygen getting in to the body, and the body is compensating by producing more Red Blood Cells to try to bring more oxygen to your cells. This situation of lower oxygen is also seen with people who live in high altitude areas where oxygen levels in the air are lower then what you find at sea level. Dehydration is fairly common and regardless if this is from poor water intake, or due to more frequent vomiting or diarrhea . . . dehydration will decrease the liquid portion of your blood and make the RBC count appear elevated as the number of Red Blood Cells becomes more concentrated with less liquid in the blood.

A disease process called Polycythemia Vera will result in the bone marrow producing too many Red Blood Cells, as well as

Special Instructions at Clinical High:

an increased production of other cells produced by the bone marrow such as White Blood Cells and Platelets, and would require further investigation from a specialist to determine the cause of this excess cell production from the bone marrow. Other factors that may contribute to an increased Red Blood Cell count could include: 1) overactive or hyper-adrenal function, 2) the effect of some medications, 3) a Vitamin C deficiency, 4) the excess production of a hormone called erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to make more red blood cells - excess production of this hormone is most likely due to a kidney tumor, 5) frequent smoking resulting in a decrease of oxygen in the body, or 6) sleep apnea where breathing is frequently interrupted during the nighttime while sleeping resulting in less oxygen in the body.	
Lab Test Explanation for RBC at Functional High: RBC Your result for this lab test is in the FUNCTIONAL HIGH range. This test is measuring the total number of Red Blood Cells (RBC) within a certain area or amount of blood during microscopic examination. Your Red Blood Cells are primarily responsible for picking up oxygen in your lungs, and transporting that oxygen to all the tissues of your body (with the help of hemoglobin located within the RBC). Your Red Blood Cells also have the important task of removing some carbon dioxide as a waste product of cell function, and transporting carbon dioxide back to the lungs so it can be removed from your body when you exhale during breathing. Red Blood Cells are produced in your bone marrow, and the average lifespan of a Red Blood Cell is about 120 days. This means that as old Red Blood Cells are removed from your body they need to be continually replaced with new ones. If your bone marrow is not able to produce enough Red Blood Cells due to some type of deficiency or disease process or if a person is losing blood (bleeding) causing a decrease in the number of Red Blood Cells within the body . . . this is called "Anemia". Seeing only the RBC count at levels that are too low would likely result in a clinical diagnosis of Anemia, but this should still be correlated with other lab tests to measure the health and function of your Red Blood Cells to help determine the possible cause of Anemia. These other lab tests would include: Hemoglobin, Hematocrit, MCV, MCH, MCHC, RDW, and measurements of iron levels in the body. When your Red Blood Cell count is in the Functional High range we will first consider if this is due to dehydration, or if this is from a situation where there is less oxygen getting into the body. Dehydration is a very common reason for a slightly elevated RBC and regardless if this is from poor water intake or due to more frequent vomiting or diarrhea . . . dehydration will decrease the liquid portion of your blood and make the RBC count appear elevated as the number of Red Blood Cells becomes more concentrated with less liquid in the blood. One reason for less oxygen getting into the body would be some type of respiratory (lung) condition or heart condition which is decreasing the amount of oxygen getting in to the body, and the body is compensating by producing more Red Blood Cells to try to bring more oxygen to your cells. This situation of lower oxygen is also seen with people who live in high altitude areas where oxygen levels in the air are lower then what you find at sea level. Other factors that may contribute to an increased Red Blood Cell count could include: 1) overactive or hyper-adrenal function, 2) the effect of some medications, 3) a Vitamin C deficiency, 4) frequent smoking resulting in a decrease of oxygen in the body, or 6) sleep apnea where breathing is frequently interrupted during the nighttime while	Special Instructions at Functional High:

sleeping resulting in less oxygen in the body.	
Lab Test Explanation for RBC at Optimal: RBC Your result for this lab test is in the OPTIMAL range. This test is measuring the total number of Red Blood Cells (RBC) within a certain area or amount of blood during microscopic examination. Your Red Blood Cells are primarily responsible for picking up oxygen in your lungs, and transporting that oxygen to all the tissues of your body (with the help of hemoglobin located within the RBC). Your Red Blood Cells also have the important task of removing some carbon dioxide as a waste product of cell function, and transporting carbon dioxide back to the lungs so it can be removed from your body when you exhale during breathing. Red Blood Cells are produced in your bone marrow, and the average lifespan of a Red Blood Cell is about 120 days. This means that as old Red Blood Cells are removed from your body they need to be continually replaced with new ones. If your bone marrow is not able to produce enough Red Blood Cells due to some type of deficiency or disease process or if a person is losing blood (bleeding) causing a decrease in the number of Red Blood Cells within the body . . . this is called "Anemia". Seeing only the RBC count at levels that are too low would likely result in a clinical diagnosis of Anemia, but this should still be correlated with other lab tests to measure the health and function of your Red Blood Cells to help determine the possible cause of Anemia. These other lab tests would include: Hemoglobin, Hematocrit, MCV, MCH, MCHC, RDW, and measurements of iron levels in the body.	Special Instructions at Optimal:
Lab Test Explanation for RBC at Functional Low: RBC Your result for this lab test is in the FUNCTIONAL LOW range. This test is measuring the total number of Red Blood Cells (RBC) within a certain area or amount of blood during microscopic examination. Your Red Blood Cells are primarily responsible for picking up oxygen in your lungs, and transporting that oxygen to all the tissues of your body (with the help of hemoglobin located within the RBC). Your Red Blood Cells also have the important task of removing some carbon dioxide as a waste product of cell function, and transporting carbon dioxide back to the lungs so it can be removed from your body when you exhale during breathing. Red Blood Cells are produced in your bone marrow, and the average lifespan of a Red Blood Cell is about 120 days. This means that as old Red Blood Cells are removed from your body they need to be continually replaced with new ones. If your bone marrow is not able to produce enough Red Blood Cells due to some type of deficiency or disease process or if a person is losing blood (bleeding) causing a decrease in the number of Red Blood Cells within the body . . . this is called "Anemia". Seeing only the RBC count at levels that are too low would likely result in a clinical diagnosis of Anemia, but this	Special Instructions at Functional Low:

should still be correlated with other lab tests to measure the health and function of your Red Blood Cells to help determine the possible cause of Anemia. These other lab tests would include: Hemoglobin, Hematocrit, MCV, MCH, MCHC, RDW, and measurements of iron levels in the body. When Red Blood Cells are in the Functional Low range we will consider them as having an "anemic tendency" or pre-anemic. Meaning they do not necessarily meet the clinical definition of Anemia, but because their RBC is lower than optimal they may be moving in the direction of becoming anemic. As RBC count is moving closer to the clinical low range we will consider the many reasons for lower than optimal RBC count more seriously to include: 1) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid and the mineral Copper, 2) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) some type of damage or disease process within the bone marrow resulting in decreased RBC production, 5) some type of damage or disease process of the kidneys resulting less production of erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to produce Red Blood Cells, or 6) a possible liver problem. If RBC continues to decline on follow-up lab testing then we may need to consult with a blood specialist in order to determine the cause of Anemia.	
Lab Test Explanation for RBC at Clinical Low: RBC Your result for this lab test is in the CLINICAL LOW range. This test is measuring the total number of Red Blood Cells (RBC) within a certain area or amount of blood during microscopic examination. Your Red Blood Cells are primarily responsible for picking up oxygen in your lungs, and transporting that oxygen to all the tissues of your body (with the help of hemoglobin located within the RBC). Your Red Blood Cells also have the important task of removing some carbon dioxide as a waste product of cell function, and transporting carbon dioxide back to the lungs so it can be removed from your body when you exhale during breathing. Red Blood Cells are produced in your bone marrow, and the average lifespan of a Red Blood Cell is about 120 days. This means that as old Red Blood Cells are removed from your body they need to be continually replaced with new ones. If your bone marrow is not able to produce enough Red Blood Cells due to some type of deficiency or disease process or if a person is losing blood (bleeding) causing a decrease in the number of Red Blood Cells within the body . . . this is called "Anemia". Seeing only the RBC count at levels that are too low would likely result in a clinical diagnosis of Anemia, but this should still be correlated with other lab tests to measure the health and function of your Red Blood Cells to help determine the possible cause of Anemia. These other lab tests would include: Hemoglobin, Hematocrit, MCV, MCH, MCHC, RDW, and measurements of iron levels in the body. When Red Blood Cells are in the Clinical Low range we will first conclude that some type of Anemia is taking place. Anemia	Special Instructions at Clinical Low:

can happen for many reason to include: 1) loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 2) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid and the mineral Copper, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) some type of damage or disease process within the bone marrow resulting in decreased RBC production, 5) some type of damage or disease process of the kidneys resulting less production of erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to produce Red Blood Cells, or 6) a possible liver problem. One may need to consult with a blood specialist in order to determine the cause of Anemia.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Hemoglobin	Clinical High	16.0 or higher								
	Functional High	15.6 - 15.9								
	Optimal	13.5 - 15.5								
	Functional Low	11.1 - 13.4								
	Clinical Low	0.0 - 11.0								

Lab Test Explanation for Hemoglobin at Clinical High:
Hemoglobin

Your result for this lab test is in the CLINICAL HIGH range. This test measures the amount of hemoglobin in a blood sample. Hemoglobin is a protein that contains iron, and this is what gives your blood its red color. Hemoglobin is an important part of your Red Blood Cells that allows you to pick-up oxygen from your lungs and transports that oxygen to all the cells of your body. It also helps transport carbon dioxide from your cells back to the lungs to be removed from your body when you exhale during breathing.

When Hemoglobin is in the Clinical High range we will first need to remember that anything that causes the Red Blood Cell count to increase will result in an increase of Hemoglobin within the blood. The reasons for high Hemoglobin can include: 1) dehydration due to poor water intake or more frequent vomiting or diarrhea, 2) not enough oxygen getting into the body because of a respiratory (lung) condition, heart condition, living at high altitudes where there is less oxygen in the air, frequent smoking, and sleep apnea, 3) vitamin B6 deficiency, 5) overactive or hyper-adrenal function, 6) the effect of some medications, 7) the excess production of a hormone called erythropoietin - a hormone produced by the kidneys that

Special Instructions at Clinical High:

stimulates the stem cells in the bone marrow to make more red blood cells - excess production of this hormone is most likely due to a kidney tumor.	
Lab Test Explanation for Hemoglobin at Functional High: Hemoglobin Your result for this lab test is in the FUNCTIONAL HIGH range. This test measures the amount of hemoglobin in a blood sample. Hemoglobin is a protein that contains iron, and this is what gives your blood its red color. Hemoglobin is an important part of your Red Blood Cells that allows you to pick-up oxygen from your lungs and transports that oxygen to all the cells of your body. It also helps transport carbon dioxide from your cells back to the lungs to be removed from your body when you exhale during breathing. When Hemoglobin is in the Functional High range we will first need to remember that anything that causes the Red Blood Cell count to increase will result in an increase of Hemoglobin within the blood. The reasons for high Hemoglobin can include: 1) not enough oxygen getting into the body because of a respiratory (lung) condition, heart condition, living at high altitudes where there is less oxygen in the air, frequent smoking, and sleep apnea, 2) dehydration due to poor water intake or more frequent vomiting or diarrhea, 3) a vitamin B6 deficiency, 4) overactive or hyper-adrenal function, or 5) the effect of some medications.	Special Instructions at Functional High:
Lab Test Explanation for Hemoglobin at Optimal: Hemoglobin Your result for this lab test is in the OPTIMAL range. This test measures the amount of hemoglobin in a blood sample. Hemoglobin is a protein that contains iron, and this is what gives your blood its red color. Hemoglobin is an important part of your Red Blood Cells that allows you to pick-up oxygen from your lungs and transports that oxygen to all the cells of your body. It also helps transport carbon dioxide from your cells back to the lungs to be removed from your body when you exhale during breathing.	Special Instructions at Optimal:
Lab Test Explanation for Hemoglobin at Functional Low: Hemoglobin Your result for this lab test is in the FUNCTIONAL LOW range. This test measures the amount of hemoglobin in a blood sample. Hemoglobin is a protein that contains iron, and this is what gives your blood its red color. Hemoglobin is an important part of your Red Blood Cells that allows you to pick-up oxygen from your lungs and transports that oxygen to all the cells of your body. It also helps transport carbon dioxide from your cells back to the lungs to be removed from your body when you exhale during breathing. When Hemoglobin is in the Functional Low range we will first need to remember that anything that causes the Red Blood Cell count to decrease will result in a decrease of Hemoglobin within the blood. With Hemoglobin in the Functional Low	Special Instructions at Functional Low:

range we will consider that person as having an "anemic tendency" or pre-anemic. Meaning they do not necessarily meet the clinical definition of Anemia, but because their Hemoglobin is lower than optimal they may be moving in the direction of becoming anemic. As Hemoglobin is moving closer to the clinical low range we will consider the many reasons for lower than optimal Hemoglobin more seriously to include: 1) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid, Vitamin C and the mineral Copper, 2) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) a possible liver or kidney problem, 5) the effect of some medications. If Hemoglobin continues to decline on follow-up lab testing then we may need to consult with a blood specialist in order to determine the cause of Anemia.	
Lab Test Explanation for Hemoglobin at Clinical Low: Hemoglobin Your result for this lab test is in the CLINICAL LOW range. This test measures the amount of hemoglobin in a blood sample. Hemoglobin is a protein that contains iron, and this is what gives your blood its red color. Hemoglobin is an important part of your Red Blood Cells that allows you to pick-up oxygen from your lungs and transports that oxygen to all the cells of your body. It also helps transport carbon dioxide from your cells back to the lungs to be removed from your body when you exhale during breathing. When Hemoglobin is in the Clinical Low range we will first need to remember that anything that causes the Red Blood Cell count to decrease will result in a decrease of Hemoglobin within the blood. When Hemoglobin is in the Clinical Low range we will first conclude that some type of Anemia is taking place. Anemia can happen for many reason to include: 1) loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 2) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid and the mineral Copper, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) some type of damage or disease process within the bone marrow resulting in decreased RBC production, 5) some type of damage or disease process of the kidneys resulting less production of erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to produce Red Blood Cells, 6) a possible liver problem, or 7) the effect of some medications. One may need to consult with a blood specialist in order to determine the cause of Anemia.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Hematocrit	Clinical High	46.7 or higher								
	Functional High	NA								
	Optimal	37.0 - 46.6								
	Functional Low	34.0 - 36.9								
	Clinical Low	0.0 - 33.9								

Lab Test Explanation for Hematocrit at Clinical High:
Hematocrit

Your result for this lab test is in the CLINICAL HIGH range. Hematocrit is simply measuring the percentage of your blood that is only Red Blood Cells, and reflects both the number of Red Blood Cells and the size or volume of the Red Blood Cells - with the size or volume measured as MCV (mean corpuscular volume) in blood testing. Understand that your blood is made up of both liquid and solid particles. The liquid is referred to as plasma, and the solid particles are things like Red Blood Cells, White Blood Cells, Platelets, and more. Hematocrit is telling us what percentage of a blood sample is purely Red Blood Cells. Hematocrit will usually travel in the same direction of the RBC count, unless the individual Red Blood Cells are smaller or larger than normal in size or volume.

When Hematocrit is in the Clinical High range we will first need to remember that anything that causes the Red Blood Cell count to increase will usually result in an increase of Hematocrit as well. The reasons for high Hematocrit can include: 1) dehydration due to poor water intake or more frequent vomiting or diarrhea, 2) not enough oxygen getting into the body because of a respiratory (lung) condition, heart condition, living at high altitudes where there is less oxygen in the air, frequent smoking, and sleep apnea, 3) vitamin B6 deficiency, 5) overactive or hyper-adrenal function, 6) the effect of some medications, 7) the excess production of a hormone called erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to make more red blood cells - excess production of this hormone is most likely due to a kidney tumor.

Special Instructions at Clinical High:

Lab Test Explanation for Hematocrit at Functional High:
Hematocrit

NA

Special Instructions at Functional High:

Lab Test Explanation for Hematocrit at Optimal:
Hematocrit

Your result for this lab test is in the OPTIMAL range. Hematocrit is simply measuring the percentage of your blood that is only Red Blood Cells, and reflects both the number of Red Blood Cells and the size or volume of the Red Blood Cells - with

Special Instructions at Optimal:

the size or volume measured as MCV (mean corpuscular volume) in blood testing. Understand that your blood is made up of both liquid and solid particles. The liquid is referred to as plasma, and the solid particles are things like Red Blood Cells, White Blood Cells, Platelets, and more. Hematocrit is telling us what percentage of a blood sample is purely Red Blood Cells. Hematocrit will usually travel in the same direction of the RBC count, unless the individual Red Blood Cells are smaller or larger than normal in size or volume.	
Lab Test Explanation for Hematocrit at Functional Low: Hematocrit Your result for this lab test is in the FUNCTIONAL LOW range. Hematocrit is simply measuring the percentage of your blood that is only Red Blood Cells, and reflects both the number of Red Blood Cells and the size or volume of the Red Blood Cells - with the size or volume measured as MCV (mean corpuscular volume) in blood testing. Understand that your blood is made up of both liquid and solid particles. The liquid is referred to as plasma, and the solid particles are things like Red Blood Cells, White Blood Cells, Platelets, and more. Hematocrit is telling us what percentage of a blood sample is purely Red Blood Cells. Hematocrit will usually travel in the same direction of the RBC count, unless the individual Red Blood Cells are smaller or larger than normal in size or volume. When Hematocrit is in the Functional Low range we will first need to remember that anything that causes the Red Blood Cell count to decrease will usually result in a decrease of Hematocrit as well. With Hematocrit in the Functional Low range we will consider that person as having an "anemic tendency" or pre-anemic. Meaning they do not necessarily meet the clinical definition of Anemia, but because their Hematocrit is lower than optimal they may be moving in the direction of becoming anemic. As Hematocrit is moving closer to the clinical low range we will consider the many reasons for lower than optimal Hematocrit more seriously to include: 1) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid, Vitamin C and the mineral Copper, 2) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) a possible liver or kidney problem, 5) the effect of some medications. If Hematocrit continues to decline on follow-up lab testing then we may need to consult with a blood specialist in order to determine the cause of Anemia.	Special Instructions at Functional Low:
Lab Test Explanation for Hematocrit at Clinical Low: Hematocrit Your result for this lab test is in the CLINICAL LOW range. Hematocrit is simply measuring the percentage of your blood that is only Red Blood Cells, and reflects both the number of Red Blood Cells and the size or volume of the Red Blood Cells - with the size or volume measured as MCV (mean corpuscular volume) in blood testing. Understand that your blood is made up of both liquid and solid particles. The liquid is referred to as plasma, and the solid particles are things like Red Blood Cells, White Blood Cells, Platelets, and more. Hematocrit is telling us what percentage of a blood sample is purely Red Blood Cells. Hematocrit will usually travel in the same direction of the RBC count, unless the individual Red Blood Cells	Special Instructions at Clinical Low:

are smaller or larger than normal in size or volume. When Hematocrit is in the Clinical Low range we will first need to remember that anything that causes the Red Blood Cell count to decrease will usually result in a decrease of Hematocrit as well. When Hematocrit is in the Clinical Low range we will first conclude that some type of Anemia is taking place. Anemia can happen for many reason to include: 1) loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a severe bladder or kidney infection resulting in blood loss through the urine, or heavy menstrual bleeding in women, 2) a deficiency of one or more nutrients that are critical for healthy Red Blood Cells such as Iron, Vitamin B12, Vitamin B6, Folic Acid and the mineral Copper, 3) the Red Blood Cells are getting destroyed due to some type of auto-immune condition or other disease process, 4) some type of damage or disease process within the bone marrow resulting in decreased RBC production, 5) some type of damage or disease process of the kidneys resulting less production of erythropoietin - a hormone produced by the kidneys that stimulates the stem cells in the bone marrow to produce Red Blood Cells, 6) a possible liver problem, or 7) the effect of some medications. One may need to consult with a blood specialist in order to determine the cause of Anemia.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
MCV	Clinical High	98 or higher								
	Functional High	93 - 97								
	Optimal	84 - 92								
	Functional Low	79 - 83								
	Clinical Low	0 - 78								

Lab Test Explanation for MCV at Clinical High: MCV Your result for this lab test is in the CLINICAL HIGH range. MCV refers to the Mean Corpuscular Volume, or the average size or volume of the Red Blood Cells. When anemia is present the MCV, along with other measurements on the health of your Red Blood Cells, may help to determine the type of anemia. A high MCV indicates your Red Blood Cells are larger than normal. When MCV is in the Clinical High range we will first consider anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of	Special Instructions at Clinical High:

Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor. Other reasons for a high MCV can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) a Vitamin C deficiency, 5) recent blood loss which will have the bone marrow increase production of new Red Blood Cells which are usually larger in size when first released into your blood, or 6) the effect of some medications.	
Lab Test Explanation for MCV at Functional High: MCV Your result for this lab test is in the FUNCTIONAL HIGH range. MCV refers to the Mean Corpuscular Volume, or the average size or volume of the Red Blood Cells. When anemia is present the MCV, along with other measurements on the health of your Red Blood Cells, may help to determine the type of anemia. When MCV is in the Functional High range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cells measurements. If other lab tests are confirming some type of anemia than the elevated MCV would be indicating an anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor. Other reasons for a higher than optimal MCV can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) a Vitamin C deficiency, 5) recent blood loss which will have the bone marrow increase production of new Red Blood Cells which are usually larger in size when first released into your blood, or 6) the effect of some medications.	Special Instructions at Functional High:
Lab Test Explanation for MCV at Optimal: MCV Your result for this lab test is in the OPTIMAL range. MCV refers to the Mean Corpuscular Volume, or the average size or volume of the Red Blood Cells. When anemia is present the MCV, along with other measurements on the health of your Red Blood Cells, may help to determine the type of anemia.	Special Instructions at Optimal:

Lab Test Explanation for MCV at Functional Low: MCV Your result for this lab test is in the FUNCTIONAL LOW range. MCV refers to the Mean Corpuscular Volume, or the average size or volume of the Red Blood Cells. When anemia is present the MCV, along with other measurements on the health of your Red Blood Cells, may help to determine the type of anemia. When MCV is in the Functional Low range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cell measurements. If other lab tests are confirming some type of anemia then we would first consider if the low MCV is due to some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine, heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells. Other reasons for a lower than optimal MCV can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) lead toxicity or other heavy metal toxicity in the body, or 4) the effect of some medications.	Special Instructions at Functional Low:
Lab Test Explanation for MCV at Clinical Low: MCV Your result for this lab test is in the CLINICAL LOW range. MCV refers to the Mean Corpuscular Volume, or the average size or volume of the Red Blood Cells. When anemia is present the MCV, along with other measurements on the health of your Red Blood Cells, may help to determine the type of anemia. When MCV is in the Clinical Low range we will first conclude that some type of anemia is taking place, and investigate if this is from some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine, heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells. Other reasons for a lower than optimal MCV can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) lead toxicity or other heavy metal toxicity in the body, or 4) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
MCH	Clinical High	33.1 or higher								
	Functional High	32.1 - 33.0								
	Optimal	28.0 - 32.0								
	Functional Low	26.6 - 27.9								
	Clinical Low	0.0 - 26.5								

Lab Test Explanation for MCH at Clinical High:
MCH

Your result for this lab test is in the CLINICAL HIGH range. MCH refers to the Mean Corpuscular Hemoglobin, or the average weight or mass of hemoglobin inside a Red Blood Cell. This measurement is calculated by taking the total mass of hemoglobin and dividing this by the number of Red Blood Cells in a volume of blood. When a person has anemia . . . the MCH can be useful for determining the type of anemia.

The reasons for MCH in the Clinical High range are nearly the same as when the MCV is in the Clinical High range. We will first consider anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor.

Other reasons for a high MCH can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) recent blood loss, or 5) the effect of some medications.

Special Instructions at Clinical High:

Lab Test Explanation for MCH at Functional High:
MCH

Your result for this lab test is in the FUNCTIONAL HIGH range. MCH refers to the Mean Corpuscular Hemoglobin, or the average weight or mass of hemoglobin inside a Red Blood Cell. This measurement is calculated by taking the total mass of hemoglobin and dividing this by the number of Red Blood Cells in a volume of blood. When a person has anemia . . . the MCH can be useful for determining the type of anemia.

Special Instructions at Functional High:

The reasons for MCH in the Functional High range are nearly the same as when the MCV is in the Functional High range. When MCH is in the Functional High range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cells measurements. If other lab tests are confirming some type of anemia than the elevated MCH would be indicating an anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor. Other reasons for a higher than optimal MCH can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) recent blood loss, or 6) the effect of some medications.	
Lab Test Explanation for MCH at Optimal: MCH Your result for this lab test is in the OPTIMAL range. MCH refers to the Mean Corpuscular Hemoglobin, or the average weight or mass of hemoglobin inside a Red Blood Cell. This measurement is calculated by taking the total mass of hemoglobin and dividing this by the number of Red Blood Cells in a volume of blood. When a person has anemia . . . the MCH can be useful for determining the type of anemia.	Special Instructions at Optimal:
Lab Test Explanation for MCH at Functional Low: MCH Your result for this lab test is in the FUNCTIONAL LOW range. MCH refers to the Mean Corpuscular Hemoglobin, or the average weight or mass of hemoglobin inside a Red Blood Cell. This measurement is calculated by taking the total mass of hemoglobin and dividing this by the number of Red Blood Cells in a volume of blood. When a person has anemia . . . the MCH can be useful for determining the type of anemia. The reasons for MCH in the Functional Low range are nearly the same as when the MCV is in the Functional Low range. When MCH is in the Functional Low range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cell measurements. If other lab tests are confirming some type of anemia then we would first consider if the low MCH is due to some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine,	Special Instructions at Functional Low:

heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells. Other reasons for a lower than optimal MCH can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) a Vitamin C deficiency, 4) lead toxicity or other heavy metal toxicity in the body, or 5) the effect of some medications.	
Lab Test Explanation for MCH at Clinical Low: MCH Your result for this lab test is in the CLINICAL LOW range. MCH refers to the Mean Corpuscular Hemoglobin, or the average weight or mass of hemoglobin inside a Red Blood Cell. This measurement is calculated by taking the total mass of hemoglobin and dividing this by the number of Red Blood Cells in a volume of blood. When a person has anemia . . . the MCH can be useful for determining the type of anemia. The reasons for MCH in the Clinical Low range are nearly the same as when the MCV is in the Clinical Low range. When MCH is in the Clinical Low range we will first conclude that some type of anemia is taking place, and investigate if this is from some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine, heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells. Other reasons for a lower than optimal MCH can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) a Vitamin C deficiency, 4) lead toxicity or other heavy metal toxicity in the body, or 4) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
MCHC	Clinical High	35.8 or higher								
	Functional High	34.7 - 35.7								
	Optimal	32.6 - 34.6								
	Functional Low	31.5 - 32.5								
	Clinical Low	0.0 - 31.4								

Lab Test Explanation for MCHC at Clinical High:
MCHC

Your result for this lab test is in the CLINICAL HIGH range. MCHC refers to Mean Corpuscular Hemoglobin Concentration, or how much of the Red Blood Cell is occupied by Hemoglobin. This measurement is most helpful to evaluate if a person's treatment for anemia is working and their anemia is improving.

The reasons for MCHC in the Clinical High range are nearly the same as when the MCV and MCH are in the Clinical High range. We will first consider anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor.

Other reasons for a high MCHC can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) recent blood loss, or 5) the effect of some medications.

Special Instructions at Clinical High:

Lab Test Explanation for MCHC at Functional High:
MCHC

Your result for this lab test is in the FUNCTIONAL HIGH range. MCHC refers to Mean Corpuscular Hemoglobin Concentration, or how much of the Red Blood Cell is occupied by Hemoglobin. This measurement is most helpful to evaluate if a person's treatment for anemia is working and their anemia is improving.

The reasons for MCHC in the Functional High range are nearly the same as when the MCV and MCH are in the Functional

Special Instructions at Functional High:

High range. When MCHC is in the Functional High range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cells measurements. If other lab tests are confirming some type of anemia than the elevated MCHC would be indicating an anemia due to folic Acid or Vitamin B12 deficiency, and both of these B vitamins can be tested for directly in standard blood lab testing. Additional testing to confirm if the anemia is due to a Vitamin B12 deficiency can be done by doing a lab test for Methylmalonic Acid . . . with elevated levels of Methylmalonic Acid being a sensitive indicator of a Vitamin B12 deficiency. Another consideration when looking at Vitamin B12 deficiency is if there is enough Intrinsic Factor - a special protein produced by the stomach that allows you to properly absorb Vitamin B12 in the small intestine. This type of anemia in which there is too little Intrinsic Factor is called Pernicious Anemia, and can happen when the stomach is not producing enough Intrinsic Factor or with an auto-immune condition in which the immune system is attacking and destroying the Intrinsic Factor. Other reasons for a higher than optimal MCHC can include: 1) Poor health or function of the stomach or small intestine or low stomach acid production, 2) a liver problem, 3) underactive or hypo-thyroid function, 4) recent blood loss, or 6) the effect of some medications.	
Lab Test Explanation for MCHC at Optimal: MCHC Your result for this lab test is in the OPTIMAL range. MCHC refers to Mean Corpuscular Hemoglobin Concentration, or how much of the Red Blood Cell is occupied by Hemoglobin. This measurement is most helpful to evaluate if a person's treatment for anemia is working and their anemia is improving.	Special Instructions at Optimal:
Lab Test Explanation for MCHC at Functional Low: MCHC Your result for this lab test is in the FUNCTIONAL LOW range. MCHC refers to Mean Corpuscular Hemoglobin Concentration, or how much of the Red Blood Cell is occupied by Hemoglobin. This measurement is most helpful to evaluate if a person's treatment for anemia is working and their anemia is improving. The reasons for MCHC in the Functional Low range are nearly the same as when the MCV and MCH are in the Functional Low range. When MCHC is in the Functional Low range it may indicate an anemic tendency, but it alone would not meet the clinical definition of anemia and should be compared to other Red Blood Cell measurements. If other lab tests are confirming some type of anemia then we would first consider if the low MCHC is due to some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine, heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells.	Special Instructions at Functional Low:

Other reasons for a lower than optimal MCHC can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) a Vitamin C deficiency, 4) lead toxicity or other heavy metal toxicity in the body, or 5) the effect of some medications.	
Lab Test Explanation for MCHC at Clinical Low: MCHC Your result for this lab test is in the CLINICAL LOW range. MCHC refers to Mean Corpuscular Hemoglobin Concentration, or how much of the Red Blood Cell is occupied by Hemoglobin. This measurement is most helpful to evaluate if a person's treatment for anemia is working and their anemia is improving. The reasons for MCHC in the Clinical Low range are nearly the same as when the MCV and MCH are in the Clinical Low range. When MCHC is in the Clinical Low range we will first conclude that some type of anemia is taking place, and investigate if this is from some type of iron deficiency resulting from: 1) poor iron intake, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood due to bleeding from some type of trauma or injury, a bleeding processing within the digestive system such as an ulcer or colon cancer, a bladder or kidney infection resulting in blood loss through the urine, heavy menstrual bleeding in women, or other internal bleeding process that can slowly deplete the body of iron as the body is losing Red Blood Cells. Other reasons for a lower than optimal MCHC can include: 1) a Vitamin B6 deficiency, 2) a process in which Red Blood Cells are getting destroyed within the body - called hemolytic anemia, 3) a Vitamin C deficiency, 4) lead toxicity or other heavy metal toxicity in the body, or 4) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
RDW	Clinical High	15.5 or higher								
	Functional High	13.1 - 15.4								
	Optimal	11.8 - 13.0								
	Functional Low	NA								
	Clinical Low	0.0 - 11.7								

Lab Test Explanation for RDW at Clinical High:
RDW

Your result for this lab test is in the CLINICAL HIGH range. RDW refers to Red Blood Cell Distribution Width, and this test measures if there is an abnormal variation in the size or width of your Red Blood Cells in a blood sample. Your Red Blood Cells are normally a little larger in size when they are first created in the bone marrow and released into your blood stream. As these cells mature they decrease slightly in size and remain that way for the life of that cell - which is about 120 days. This means that your bone marrow should be constantly producing new Red Blood Cells to replace the ones that die and are removed from your blood. Therefore, in the same blood sample we expect to see a certain variation in the width of your Red Blood Cells as new ones are replacing old ones.

If something is affecting the health of your Red Blood Cells and hemoglobin, and your body is sensing that not enough oxygen is getting transported to all the cells of your body, your bone marrow will then produce and release more new Red Blood Cells into your blood as a way to get more oxygen transported to your cells. This increases the ratio of the slightly larger new Red Blood Cells versus the slightly smaller more mature Red Blood Cells. This change in the variation of Red Blood Cells size is seen as an increase in the RDW, and is most often seen with some type of anemia. The RDW is only a relevant test for those people that have anemia, and is not a helpful measurement for those that do not have anemia.

When RDW is in the Clinical High range we will first need to review other lab tests related to the health of your Red Blood Cells to determine if there is some type of anemia. If anemia exists with a Clinical High RDW then we will consider: 1) iron deficiency anemia combined with a second type of anemia, 2) anemia due to Folic Acid deficiency, 3) anemia due to Vitamin B12 deficiency, and 4) other causes of anemia as indicated by other lab tests.

Special Instructions at Clinical High:

Lab Test Explanation for RDW at Functional High:
RDW

Your result for this lab test is in the FUNCTIONAL HIGH range. RDW refers to Red Blood Cell Distribution Width, and this test measures if there is an abnormal variation in the size or width of your Red Blood Cells in a blood sample. Your Red Blood Cells are normally a little larger in size when they are first created in the bone marrow and released into your blood stream. As these cells mature they decrease slightly in size and remain that way for the life of that cell - which is about 120

Special Instructions at Functional High:

days. This means that your bone marrow should be constantly producing new Red Blood Cells to replace the ones that die and are removed from your blood. Therefore, in the same blood sample we expect to see a certain variation in the width of your Red Blood Cells as new ones are replacing old ones. If something is affecting the health of your Red Blood Cells and hemoglobin, and your body is sensing that not enough oxygen is getting transported to all the cells of your body, your bone marrow will then produce and release more new Red Blood Cells into your blood as a way to get more oxygen transported to your cells. This increases the ratio of the slightly larger new Red Blood Cells versus the slightly smaller more mature Red Blood Cells. This change in the variation of Red Blood Cells size is seen as an increase in the RDW, and is most often seen with some type of anemia. The RDW is only a relevant test for those people that have anemia, and is not a helpful measurement for those that do not have anemia. When RDW is in the Functional High range we will first need to review other lab tests related to the health of your Red Blood Cells to determine if there is some type of anemia. If anemia exists with a Functional High RDW then we will consider: 1) iron deficiency anemia combined with a second type of anemia, 2) anemia due to Folic Acid deficiency, 3) anemia due to Vitamin B12 deficiency, and 4) other causes of anemia as indicated by other lab tests.	
Lab Test Explanation for RDW at Optimal: RDW Your result for this lab test is in the OPTIMAL range. RDW refers to Red Blood Cell Distribution Width, and this test measures if there is an abnormal variation in the size or width of your Red Blood Cells in a blood sample. Your Red Blood Cells are normally a little larger in size when they are first created in the bone marrow and released into your blood stream. As these cells mature they decrease slightly in size and remain that way for the life of that cell - which is about 120 days. This means that your bone marrow should be constantly producing new Red Blood Cells to replace the ones that die and are removed from your blood. Therefore, in the same blood sample we expect to see a certain variation in the width of your Red Blood Cells as new ones are replacing old ones. If something is affecting the health of your Red Blood Cells and hemoglobin, and your body is sensing that not enough oxygen is getting transported to all the cells of your body, your bone marrow will then produce and release more new Red Blood Cells into your blood as a way to get more oxygen transported to your cells. This increases the ratio of the slightly larger new Red Blood Cells versus the slightly smaller more mature Red Blood Cells. This change in the variation of Red Blood Cells size is seen as an increase in the RDW, and is most often seen with some type of anemia. The RDW is only a relevant test for those people that have anemia, and is not a helpful measurement for those that do not have anemia.	Special Instructions at Optimal:
Lab Test Explanation for RDW at Functional Low: RDW NA	Special Instructions at Functional Low:

Lab Test Explanation for RDW at Clinical Low:	Special Instructions at Clinical Low:
RDW Your result for this lab test is in the CLINICAL LOW range. RDW refers to Red Blood Cell Distribution Width, and this test measures if there is an abnormal variation in the size or width of your Red Blood Cells in a blood sample. Your Red Blood Cells are normally a little larger in size when they are first created in the bone marrow and released into your blood stream. As these cells mature they decrease slightly in size and remain that way for the life of that cell - which is about 120 days. This means that your bone marrow should be constantly producing new Red Blood Cells to replace the ones that die and are removed from your blood. Therefore, in the same blood sample we expect to see a certain variation in the width of your Red Blood Cells as new ones are replacing old ones. If something is affecting the health of your Red Blood Cells and hemoglobin, and your body is sensing that not enough oxygen is getting transported to all the cells of your body, your bone marrow will then produce and release more new Red Blood Cells into your blood as a way to get more oxygen transported to your cells. This increases the ratio of the slightly larger new Red Blood Cells versus the slightly smaller more mature Red Blood Cells. This change in the variation of Red Blood Cells size is seen as an increase in the RDW, and is most often seen with some type of anemia. The RDW is only a relevant test for those people that have anemia, and is not a helpful measurement for those that do not have anemia. When RDW is in the Clinical Low range we will first need to review other lab tests related to the health of your Red Blood Cells to determine if there is some type of anemia. If anemia exists with a Clinical Low RDW then we will consider: 1) iron deficiency anemia, 2) poorly absorbing iron in the digestive system due to low stomach acid, digestive inflammation, or intestinal parasites, 3) a loss of blood, 4) anemia due to Vitamin B6 deficiency, and 5) other causes of anemia as indicated by other lab tests.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Platelets	Clinical High	380 or higher								
	Functional High	NA								
	Optimal	150 - 379								
	Functional Low	NA								
	Clinical Low	0 - 149								

Lab Test Explanation for Platelets at Clinical High:
Platelets

Your result for this lab test is in the CLINICAL HIGH range. Platelets are essential for normal blood clotting, and this test for Platelet Count is to determine the number of Platelets in your blood sample. Platelets help to stop bleeding by adhering to the location of blood vessel damage, by clumping together to form a "platelet plug", and by releasing chemicals that help to stimulate more Platelets to clump together. Platelets are part of a complex series of events in the body that leads to proper clotting when a person is bleeding - called a coagulation cascade. Platelets are formed in the bone marrow and have a life-span of 8 - 10 days, so the bone marrow must be constantly creating new platelets to replace the old ones and to replace ones that are lost due to bleeding.

When Platelets are in the Clinical High range we will first consider if there is an infection or inflammatory process within the body as indicated by other lab results. There are many conditions or situations that can contribute to higher than optimal Platelet Levels to include: 1) Oral contraceptives or estrogen replacement, 2) tissue damage or bleeding, 3) excess Platelets production by the bone marrow - a condition called Polycythemia Vera along with elevated Red Blood Cells, 4) atherosclerosis - a condition in which plaque is forming within the blood vessels, 5) several types of anemia, and 6) several types of cancers and malignancies.

Special Instructions at Clinical High:

Lab Test Explanation for Platelets at Functional High:
Platelets

NA

Special Instructions at Functional High:

Lab Test Explanation for Platelets at Optimal:
Platelets

Your result for this lab test is in the OPTIMAL range. Platelets are essential for normal blood clotting, and this test for Platelet Count is to determine the number of Platelets in your blood sample. Platelets help to stop bleeding by adhering to the location of blood vessel damage, by clumping together to form a "platelet plug", and by releasing chemicals that help

Special Instructions at Optimal:

to stimulate more Platelets to clump together. Platelets are part of a complex series of events in the body that leads to proper clotting when a person is bleeding - called a coagulation cascade. Platelets are formed in the bone marrow and have a life-span of 8 - 10 days, so the bone marrow must be constantly creating new platelets to replace the old ones and to replace ones that are lost due to bleeding.	
Lab Test Explanation for Platelets at Functional Low: Platelets NA	Special Instructions at Functional Low:
Lab Test Explanation for Platelets at Clinical Low: Platelets Your result for this lab test is in the CLINICAL LOW range. Platelets are essential for normal blood clotting, and this test for Platelet Count is to determine the number of Platelets in your blood sample. Platelets help to stop bleeding by adhering to the location of blood vessel damage, by clumping together to form a "platelet plug", and by releasing chemicals that help to stimulate more Platelets to clump together. Platelets are part of a complex series of events in the body that leads to proper clotting when a person is bleeding - called a coagulation cascade. Platelets are formed in the bone marrow and have a life-span of 8 - 10 days, so the bone marrow must be constantly creating new platelets to replace the old ones and to replace ones that are lost due to bleeding. When Platelets are in the Clinical Low range we will need to consider many conditions or situations that can contribute to lower than optimal Platelet Levels to include: 1) decreased production of Platelets by the bone marrow due to some type of disease or condition, 2) infection, 3) heavy metal toxicity, 4) several types of anemia, 5) an autoimmune condition in which the immune system is attacking the platelets, 6) a Vitamin B12 / Folic Acid deficiency, 7) Vitamin K deficiency, 8) several types of cancer - especially leukemia, or 9) the effect of some medications.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Neutrophils	Clinical High	75 or higher								
	Functional High	61 - 74								
	Optimal	50 - 60								
	Functional Low	40 - 49								
	Clinical Low	0 - 39								

Lab Test Explanation for Neutrophils at Clinical High:
Neutrophils

Your result for this lab test is in the CLINICAL HIGH range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This test is to determine what percentage of total White Blood Cells are specifically Neutrophils. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased.

When Neutrophils are in the Clinical High range we will need to consider many sources to include: 1) a more recent or acute bacterial infection, 2) early stages of some viral infections which then leads to low Neutrophil levels at later stages of the viral infection, 3) an inflammatory process in the body, 4) adrenal problems, 5) respiratory problems from asthma or emphysema, or 6) Immune disorder such as cancer or overproduction of White Blood Cells by the bone marrow.

Special Instructions at Clinical High:

Lab Test Explanation for Neutrophils at Functional High:
Neutrophils

Your result for this lab test is in the FUNCTIONAL HIGH range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This test is to determine what percentage of total White Blood Cells are specifically Neutrophils. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased.

When Neutrophils are in the Functional High range we will need to consider many sources to include: 1) very early stage of a more recent or acute bacterial infection or a lowering of Neutrophils from higher levels as an infection is becoming chronic, 2) an inflammatory process in the body, 4) adrenal problems, or 5) respiratory problems from asthma or emphysema.

Special Instructions at Functional High:

Lab Test Explanation for Neutrophils at Optimal:
Neutrophils

Special Instructions at Optimal:

Your result for this lab test is in the OPTIMAL range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This test is to determine what percentage of total White Blood Cells are specifically Neutrophils. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased.	
Lab Test Explanation for Neutrophils at Functional Low: Neutrophils Your Result for this lab test is in the FUNCTIONAL LOW range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This test is to determine what percentage of total White Blood Cells are specifically Neutrophils. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in chronic viral infections is the Neutrophils decreased and the Lymphocytes increased. When Neutrophils are in the Functional Low range we will need to consider many sources to include: 1) a chronic viral infection - often combined with an increase in Lymphocytes, 2) several types of anemia, 3) adrenal problems, 4) heavy metal exposure, 5) autoimmune conditions such as Rheumatoid Arthritis or Lupus, or 6) people suffering from multiple food allergies.	Special Instructions at Functional Low:
Lab Test Explanation for Neutrophils at Clinical Low: Neutrophils Your result for this lab test is in the CLINICAL LOW range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This test is to determine what percentage of total White Blood Cells are specifically Neutrophils. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in chronic viral infections is the Neutrophils decreased and the Lymphocytes increased. When Neutrophils are in the Clinical Low range we will need to consider many sources to include: 1) a chronic viral infection - often combined with an increase in Lymphocytes, 2) several types of anemia, 3) adrenal problems, 4) heavy metal exposure, 5) autoimmune conditions such as Rheumatoid Arthritis or Lupus, 6) people suffering from multiple food allergies, or 7) Immune disorder such as cancer or underproduction of White Blood Cells by the bone marrow.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Lymphs (Lymphocytes)	Clinical High	47 or higher								
	Functional High	39 - 46								
	Optimal	22 - 38								
	Functional Low	14 - 21								
	Clinical Low	0 - 13								

Lab Test Explanation for Lymphs at Clinical High:
Lymphs

Your result for this lab test is in the CLINICAL HIGH range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Lymphocytes. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased.

When Lymphocytes are in the Clinical High range we will need to consider many sources to include: 1) an acute or chronic viral infection, 2) an inflammatory process in the body, 4) underactive or hypo-adrenal function, 5) underactive or hypo-thyroid function, 6) fungal or parasite infection, 7) autoimmune conditions, 8) poor detoxification or toxin overload within the body - including heavy metal toxicity, 9) respiratory problems from asthma or emphysema, or 10) Immune disorder such as cancer or overproduction of White Blood Cells by the bone marrow.

Special Instructions at Clinical High:

Lab Test Explanation for Lymphs at Functional High:
Lymphs

Your result for this lab test is in the FUNCTIONAL HIGH range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Lymphocytes. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased.

Special Instructions at Functional High:

When Lymphocytes are in the Functional High range we will need to consider many sources to include: 1) an acute or chronic viral infection, 2) an inflammatory process in the body, 4) underactive or hypo-adrenal function, 5) underactive or hypo-thyroid function, 6) fungal or parasite infection, 7) autoimmune conditions, 8) poor detoxification or toxin overload within the body - including heavy metal toxicity, or 9) respiratory problems from asthma or emphysema.	
Lab Test Explanation for Lymphs at Optimal: Lymphs Your result for this lab test is in the OPTIMAL range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Lymphocytes. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased.	Special Instructions at Optimal:
Lab Test Explanation for Lymphs at Functional Low: Lymphs Your Result for this lab test is in the FUNCTIONAL LOW range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Lymphocytes. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a bacterial infection is the Lymphocytes decreased and the Neutrophils increased. When Lymphocytes are in the Functional Low range we will need to consider many sources to include: 1) a bacterial infection - often combined with an increase in Neutrophils, 2) an inflammatory process in the body, 3) overactive or hyper-adrenal function, 4) autoimmune conditions such as Rheumatoid Arthritis or Lupus, and 6) people suffering from multiple food allergies.	Special Instructions at Functional Low:
Lab Test Explanation for Lymphs at Clinical Low: Lymphs Your result for this lab test is in the CLINICAL LOW range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Lymphocytes. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the	Special Instructions at Clinical Low:

second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a bacterial infection is the Lymphocytes decreased and the Neutrophils increased. When Lymphocytes are in the Clinical Low range we will need to consider many sources to include: 1) a bacterial infection - often combined with an increase in Neutrophils, 2) an inflammatory process in the body, 3) overactive or hyper-adrenal function, 4) autoimmune conditions such as Rheumatoid Arthritis or Lupus, 6) people suffering from multiple food allergies, or 7) Immune disorder such as cancer or underproduction of White Blood Cells by the bone marrow.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Monocytes	Clinical High	13 or higher								
	Functional High	8 - 12								
	Optimal	0 - 7								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Monocytes at Clinical High: Monocytes Your result for this lab test is in the CLINICAL HIGH range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This test is to determine what percentage of total White Blood Cells are specifically Monocytes. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection. When Monocytes are in the Clinical High range we will first consider if a person is recovering from some type of infection as it is typical for Monocytes to increase in the later stages of an infection to clean up the infected tissue. A more complete list of reasons why the Monocytes can be elevated include: 1) A bacterial or viral infection, 2) a parasite infection - often combined with elevated Eosinophils, 3) when a person has “Mono” referring to Mononucleosis caused by the Epstein-Barr virus - Mononucleosis simply refers to the presence of an abnormally large number of Monocytes in the blood, 4) an	Special Instructions at Clinical High:

inflammatory process in the body, 5) a possible liver problem, 6) a possible enlarged prostate in men over the age of 40 - often combined with increased Creatinine levels and increased LDH levels - specifically the LDH isoenzyme #4, and 7) some cancers, leukemia, or other disorders that result in overproduction of White Blood Cells from the bone marrow.	
Lab Test Explanation for Monocytes at Functional High: Monocytes Your result for this lab test is in the FUNCTIONAL HIGH range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This test is to determine what percentage of total White Blood Cells are specifically Monocytes. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection. When Monocytes are in the Functional High range we will first consider if a person is recovering from some type of infection as it is typical for Monocytes to increase in the later stages of an infection to clean up the infected tissue. A more complete list of reasons why the Monocytes can be elevated include: 1) A bacterial or viral infection, 2) a parasite infection - often combined with elevated Eosinophils, 3) when a person has "Mono" referring to Mononucleosis caused by the Epstein-Barr virus - Mononucleosis simply refers to the presence of an abnormally large number of Monocytes in the blood, 4) an inflammatory process in the body, 5) a possible liver problem, and 6) a possible enlarged prostate in men over the age of 40 - often combined with increased Creatinine levels and increased LDH levels - specifically the LDH isoenzyme #4.	Special Instructions at Functional High:
Lab Test Explanation for Monocytes at Optimal: Monocytes Your result for this lab test is in the OPTIMAL range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This test is to determine what percentage of total White Blood Cells are specifically Monocytes. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection.	Special Instructions at Optimal:
Lab Test Explanation for Monocytes at Functional Low: Monocytes NA	Special Instructions at Functional Low:

Lab Test Explanation for Monocytes at Clinical Low:	Special Instructions at Clinical Low:
Monocytes NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Eos (Eosinophils)	Clinical High	6 or higher								
	Functional High	3 - 5								
	Optimal	0 - 2								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Eos at Clinical High:	Special Instructions at Clinical High:
Eos Your result for this lab test is in the CLINICAL HIGH range. Eos - more commonly referred to as Eosinophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Eosinophils. Eosinophils are more often involved in parasite infections and environmental or food allergies and sensitivities. They have the ability to consume and remove broken-down particles of protein - to include the remains of invading organisms after an immune system attack and antibody complexes that get created from an allergic reaction - both of which have different kinds of proteins that make up their structure. When Eosinophils are in the Clinical High range we will need to consider many reasons to include: 1) a parasite infection - often combined with elevated Monocytes, 2) an allergic response to foods or environmental factors, 3) asthma or other respiratory issues, 4) underactive or hypo-adrenal function, 5) overactive or hyper-thyroid function, 6) the effect of some medications, and 7) some cancers or other disorders that result in overproduction of White Blood Cells from the bone marrow.	
Lab Test Explanation for Eos at Functional High:	Special Instructions at Functional High:
Eos Your result for this lab test is in the FUNCTIONAL HIGH range. Eos - more commonly referred to as Eosinophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Eosinophils. Eosinophils are more often involved in parasite infections and environmental or food allergies and sensitivities. They have	

the ability to consume and remove broken-down particles of protein - to include the remains of invading organisms after an immune system attack and antibody complexes that get created from an allergic reaction - both of which have different kinds of proteins that make up their structure. When Eosinophils are in the Functional High range we will need to consider many reasons to include: 1) a parasite infection - often combined with elevated Monocytes, 2) an allergic response to foods or environmental factors, 3) asthma or other respiratory issues, 4) underactive or hypo-adrenal function, 5) overactive or hyper-thyroid function, and 6) the effect of some medications.	
Lab Test Explanation for Eos at Optimal: Eos Your result for this lab test is in the OPTIMAL range. Eos - more commonly referred to as Eosinophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Eosinophils. Eosinophils are more often involved in parasite infections and environmental or food allergies and sensitivities. They have the ability to consume and remove broken-down particles of protein - to include the remains of invading organisms after an immune system attack and antibody complexes that get created from an allergic reaction - both of which have different kinds of proteins that make up their structure.	Special Instructions at Optimal:
Lab Test Explanation for Eos at Functional Low: Eos NA	Special Instructions at Functional Low:
Lab Test Explanation for Eos at Clinical Low: Eos NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Basos (Basophils)	Clinical High	4 or higher								
	Functional High	2 - 3								
	Optimal	0 - 1								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Basos at Clinical High: Basos Your result for this lab test is in the CLINICAL HIGH range. Basos - more commonly referred to as Basophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Basophils. Once Basophils enter the tissue they are then referred to as a Mast cell. Both Basophils and Mast cells contain small pockets of powerful chemicals like histamine, serotonin and heparin which alter blood supply to tissues, help prevent clotting in inflamed tissue, and help mobilize the body's immune system. Basophils can be elevated in nearly any type of inflammatory condition or immune system reaction.	Special Instructions at Clinical High:
Lab Test Explanation for Basos at Functional High: Basos Your result for this lab test is in the FUNCTIONAL HIGH range. Basos - more commonly referred to as Basophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Basophils. Once Basophils enter the tissue they are then referred to as a Mast cell. Both Basophils and Mast cells contain small pockets of powerful chemicals like histamine, serotonin and heparin which alter blood supply to tissues, help prevent clotting in inflamed tissue, and help mobilize the body's immune system. Basophils can be elevated in nearly any type of inflammatory condition or immune system reaction.	Special Instructions at Functional High:
Lab Test Explanation for Basos at Optimal: Basos Your result for this lab test is in the OPTIMAL range. Basos - more commonly referred to as Basophils - are one type of White Blood Cell. This test is to determine what percentage of total White Blood Cells are specifically Basophils. Once Basophils enter the tissue they are then referred to as a Mast cell. Both Basophils and Mast cells contain small pockets of powerful chemicals like histamine, serotonin and heparin which alter blood supply to tissues, help prevent clotting in inflamed tissue, and help mobilize the body's immune system. Basophils can be elevated in nearly any type of inflammatory condition or immune system reaction.	Special Instructions at Optimal:

Lab Test Explanation for Basos at Functional Low: Basos NA	Special Instructions at Functional Low:
Lab Test Explanation for Basos at Clinical Low: Basos NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Neutrophils (Absolute)	Clinical High	7.1 or higher								
	Functional High	5.7 - 7.0								
	Optimal	2.9 - 5.6								
	Functional Low	1.4 - 2.8								
	Clinical Low	0.0 - 1.3								

Lab Test Explanation for Neutrophils (Absolute) at Clinical High: Neutrophils (Absolute) Your result for this lab test is in the CLINICAL HIGH range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This lab test is a calculation to determine the actual or absolute number of Neutrophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Neutrophils can be helpful in determining what type infection or challenge to the immune system is taking place. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased. When Neutrophils are in the Clinical High range we will need to consider many sources to include: 1) a more recent or acute bacterial infection, 2) early stages of some viral infections which then leads to low Neutrophil levels at later stages of the viral infection, 3) an inflammatory process in the body, 4) adrenal problems, 5) respiratory problems from asthma or emphysema, or 6) Immune disorder such as cancer or overproduction of White Blood Cells by the bone marrow.	Special Instructions at Clinical High:

Lab Test Explanation for Neutrophils (Absolute) at Functional High: Neutrophils (Absolute) Your result for this lab test is in the FUNCTIONAL HIGH range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This lab test is a calculation to determine the actual or absolute number of Neutrophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Neutrophils can be helpful in determining what type infection or challenge to the immune system is taking place. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased. When Neutrophils are in the Functional High range we will need to consider many sources to include: 1) very early stage of a more recent or acute bacterial infection or a lowering of Neutrophils from higher levels as an infection is becoming chronic, 2) an inflammatory process in the body, 4) adrenal problems, or 5) respiratory problems from asthma or emphysema.	Special Instructions at Functional High:
Lab Test Explanation for Neutrophils (Absolute) at Optimal: Neutrophils (Absolute) Your result for this lab test is in the OPTIMAL range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This lab test is a calculation to determine the actual or absolute number of Neutrophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Neutrophils can be helpful in determining what type infection or challenge to the immune system is taking place. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in a more active or acute bacterial infection is the Neutrophils increased and the Lymphocytes decreased.	Special Instructions at Optimal:
Lab Test Explanation for Neutrophils (Absolute) at Functional Low: Neutrophils (Absolute) Your Result for this lab test is in the FUNCTIONAL LOW range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This lab test is a calculation to determine the actual or absolute number of Neutrophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Neutrophils can be helpful in determining what type infection or challenge to the immune system is taking place. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in chronic viral infections is the Neutrophils decreased and the Lymphocytes increased. When Neutrophils are in the Functional Low range we will need to consider many sources to include: 1) a chronic viral infection - often combined with an increase in Lymphocytes, 2) several types of anemia, 3) adrenal problems, 4) heavy	Special Instructions at Functional Low:

metal exposure, 5) autoimmune conditions such as Rheumatoid Arthritis or Lupus, or 6) people suffering from multiple food allergies.	
Lab Test Explanation for Neutrophils (Absolute) at Clinical Low: Neutrophils (Absolute) Your result for this lab test is in the CLINICAL LOW range. Neutrophils are one type of White Blood Cell, and they usually make-up the greatest percentage of the different kinds of White Blood Cells in a normal functioning immune system that is not fighting off an infection. This lab test is a calculation to determine the actual or absolute number of Neutrophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Neutrophils can be helpful in determining what type infection or challenge to the immune system is taking place. Neutrophils are primarily involved in fighting off bacterial infections. A common pattern to see in chronic viral infections is the Neutrophils decreased and the Lymphocytes increased. When Neutrophils are in the Clinical Low range we will need to consider many sources to include: 1) a chronic viral infection - often combined with an increase in Lymphocytes, 2) several types of anemia, 3) adrenal problems, 4) heavy metal exposure, 5) autoimmune conditions such as Rheumatoid Arthritis or Lupus, 6) people suffering from multiple food allergies, or 7) Immune disorder such as cancer or underproduction of White Blood Cells by the bone marrow.	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Lymphs (Absolute)	Clinical High	3.2 or higher								
	Functional High	2.6 - 3.1								
	Optimal	1.4 - 2.5								
	Functional Low	0.7 - 1.3								
	Clinical Low	0.0 - 0.6								

Lab Test Explanation for Lymphs (Absolute) at Clinical High: Lymphs (Absolute) Your result for this lab test is in the CLINICAL HIGH range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Lymphocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Lymphocytes can be helpful in determining what type infection or challenge to the immune system is taking place. There	Special Instructions at Clinical High:

are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased. When Lymphocytes are in the Clinical High range we will need to consider many sources to include: 1) an acute or chronic viral infection, 2) an inflammatory process in the body, 4) underactive or hypo-adrenal function, 5) underactive or hypo-thyroid function, 6) fungal or parasite infection, 7) autoimmune conditions, 8) poor detoxification or toxin overload within the body - including heavy metal toxicity, 9) respiratory problems from asthma or emphysema, or 10) Immune disorder such as cancer or overproduction of White Blood Cells by the bone marrow.	
Lab Test Explanation for Lymphs (Absolute) at Functional High: Lymphs (Absolute) Your result for this lab test is in the FUNCTIONAL HIGH range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Lymphocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Lymphocytes can be helpful in determining what type infection or challenge to the immune system is taking place. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased. When Lymphocytes are in the Functional High range we will need to consider many sources to include: 1) an acute or chronic viral infection, 2) an inflammatory process in the body, 4) underactive or hypo-adrenal function, 5) underactive or hypo-thyroid function, 6) fungal or parasite infection, 7) autoimmune conditions, 8) poor detoxification or toxin overload within the body - including heavy metal toxicity, or 9) respiratory problems from asthma or emphysema.	Special Instructions at Functional High:
Lab Test Explanation for Lymphs (Absolute) at Optimal: Lymphs (Absolute) Your result for this lab test is in the OPTIMAL range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Lymphocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Lymphocytes can be helpful in determining what type infection or challenge to the immune system is taking place. There	Special Instructions at Optimal:

are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a viral infection is the Lymphocytes increased and the Neutrophils decreased.	
Lab Test Explanation for Lymphs (Absolute) at Functional Low: Lymphs (Absolute) Your Result for this lab test is in the FUNCTIONAL LOW range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Lymphocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Lymphocytes can be helpful in determining what type infection or challenge to the immune system is taking place. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a bacterial infection is the Lymphocytes decreased and the Neutrophils increased. When Lymphocytes are in the Functional Low range we will need to consider many sources to include: 1) a bacterial infection - often combined with an increase in Neutrophils, 2) an inflammatory process in the body, 3) overactive or hyper-adrenal function, 4) autoimmune conditions such as Rheumatoid Arthritis or Lupus, and 6) people suffering from multiple food allergies.	Special Instructions at Functional Low:
Lab Test Explanation for Lymphs (Absolute) at Clinical Low: Lymphs (Absolute) Your result for this lab test is in the CLINICAL LOW range. Lymphs - more commonly referred to as Lymphocytes - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Lymphocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Lymphocytes can be helpful in determining what type infection or challenge to the immune system is taking place. There are several kinds of Lymphocytes such as T-cells, B-cells and Natural Killer Cells, and these Lymphocytes make up the second most common type of White Blood Cell in a normal functioning immune system that is not fighting off an infection. Lymphocytes are created in the bone marrow, and then travel to other tissues such as the thymus gland and spleen to mature into their active immune cell. Lymphocytes are primarily involved in fighting off viral infections, and they often become activated with inflammation. A common pattern to see with a bacterial infection is the Lymphocytes decreased and the Neutrophils increased.	Special Instructions at Clinical Low:

When Lymphocytes are in the Clinical Low range we will need to consider many sources to include: 1) a bacterial infection - often combined with an increase in Neutrophils, 2) an inflammatory process in the body, 3) overactive or hyper-adrenal function, 4) autoimmune conditions such as Rheumatoid Arthritis or Lupus, 6) people suffering from multiple food allergies, or 7) Immune disorder such as cancer or underproduction of White Blood Cells by the bone marrow.	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Monocytes (Absolute)	Clinical High	1.0 or higher								
	Functional High	0.7 - 0.9								
	Optimal	0.0 - 0.6								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation for Monocytes (Absolute) at Clinical High:

Monocytes (Absolute)

Your result for this lab test is in the CLINICAL HIGH range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This lab test is a calculation to determine the actual or absolute number of Monocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Monocytes can be helpful in determining what type infection or challenge to the immune system is taking place. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection.

When Monocytes are in the Clinical High range we will first consider if a person is recovering from some type of infection as it is typical for Monocytes to increase in the later stages of an infection to clean up the infected tissue. A more complete list of reasons why the Monocytes can be elevated include: 1) A bacterial or viral infection, 2) a parasite infection - often combined with elevated Eosinophils, 3) when a person has “Mono” referring to Mononucleosis caused by the Epstein-Barr virus - Mononucleosis simply refers to the presence of an abnormally large number of Monocytes in the blood, 4) an inflammatory process in the body, 5) a possible liver problem, 6) a possible enlarged prostate in men over the age of 40 - often combined with increased Creatinine levels and increased LDH levels - specifically the LDH isoenzyme #4, and 7) some cancers, leukemia, or other disorders that result in overproduction of White Blood Cells from the bone marrow.

Special Instructions at Clinical High:

Lab Test Explanation for Monocytes (Absolute) at Functional High: Monocytes (Absolute) Your result for this lab test is in the FUNCTIONAL HIGH range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This lab test is a calculation to determine the actual or absolute number of Monocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Monocytes can be helpful in determining what type infection or challenge to the immune system is taking place. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection. When Monocytes are in the Functional High range we will first consider if a person is recovering from some type of infection as it is typical for Monocytes to increase in the later stages of an infection to clean up the infected tissue. A more complete list of reasons why the Monocytes can be elevated include: 1) A bacterial or viral infection, 2) a parasite infection - often combined with elevated Eosinophils, 3) when a person has "Mono" referring to Mononucleosis caused by the Epstein-Barr virus - Mononucleosis simply refers to the presence of an abnormally large number of Monocytes in the blood, 4) an inflammatory process in the body, 5) a possible liver problem, and 6) a possible enlarged prostate in men over the age of 40 - often combined with increased Creatinine levels and increased LDH levels - specifically the LDH isoenzyme #4.	Special Instructions at Functional High:
Lab Test Explanation for Monocytes (Absolute) at Optimal: Monocytes (Absolute) Your result for this lab test is in the OPTIMAL range. Monocytes are one type of White Blood Cell, and they can increase in response to a bacterial, viral or parasite infection. This lab test is a calculation to determine the actual or absolute number of Monocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Monocytes can be helpful in determining what type infection or challenge to the immune system is taking place. Monocytes are produced in the bone marrow and then travel to tissues that are infected where they turn into a macrophage - a type of cell that consumes and removes infecting organisms, the fragments of damaged cells, and any other material left behind from an infection. It is typical to see Monocytes elevated in the final stages of an infection when the body is recovering from the infection.	Special Instructions at Optimal:
Lab Test Explanation for Monocytes (Absolute) at Functional Low: Monocytes (Absolute) NA	Special Instructions at Functional Low:

Lab Test Explanation for Monocytes (Absolute) at Clinical Low:	Special Instructions at Clinical Low:
Monocytes (Absolute) NA	

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Eos (Absolute)	Clinical High	0.5 or higher								
	Functional High	NA								
	Optimal	0.0 - 0.4								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Eos (Absolute) at Clinical High:	Special Instructions at Clinical High:
Eos (Absolute) Your result for this lab test is in the CLINICAL HIGH range. Eos - more commonly referred to as Eosinophils - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Eosinophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Eosinophils can be helpful in determining what type infection or challenge to the immune system is taking place. Eosinophils are more often involved in parasite infections and environmental or food allergies and sensitivities. They have the ability to consume and remove broken-down particles of protein - to include the remains of invading organisms after an immune system attack and antibody complexes that get created from an allergic reaction - both of which have different kinds of proteins that make up their structure. When Eosinophils are in the Clinical High range we will need to consider many reasons to include: 1) a parasite infection - often combined with elevated Monocytes, 2) an allergic response to foods or environmental factors, 3) asthma or other respiratory issues, 4) underactive or hypo-adrenal function, 5) overactive or hyper-thyroid function, 6) the effect of some medications, and 7) some cancers or other disorders that result in overproduction of White Blood Cells from the bone marrow.	

Lab Test Explanation for Eos (Absolute) at Functional High:	Special Instructions at Functional High:
Eos (Absolute) NA	

Lab Test Explanation for Eos (Absolute) at Optimal: Eos (Absolute) Your result for this lab test is in the OPTIMAL range. Eos - more commonly referred to as Eosinophils - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Eosinophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Eosinophils can be helpful in determining what type infection or challenge to the immune system is taking place. Eosinophils are more often involved in parasite infections and environmental or food allergies and sensitivities. They have the ability to consume and remove broken-down particles of protein - to include the remains of invading organisms after an immune system attack and antibody complexes that get created from an allergic reaction - both of which have different kinds of proteins that make up their structure.	Special Instructions at Optimal:
Lab Test Explanation for Eos (Absolute) at Functional Low: Eos (Absolute) NA	Special Instructions at Functional Low:
Lab Test Explanation for Eos (Absolute) at Clinical Low: Eos (Absolute) NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Basos (Absolute)	Clinical High	0.3 or higher								
	Functional High	NA								
	Optimal	0.0 - 0.2								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Basos (Absolute) at Clinical High: Basos (Absolute) Your result for this lab test is in the CLINICAL HIGH range. Basos - more commonly referred to as Basophils - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Basophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Basophils can	Special Instructions at Clinical High:

be helpful in determining what type infection or challenge to the immune system is taking place. Once Basophils enter the tissue they are then referred to as a Mast cell. Both Basophils and Mast cells contain small pockets of powerful chemicals like histamine, serotonin and heparin which alter blood supply to tissues, help prevent clotting in inflamed tissue, and help mobilize the body's immune system. Basophils can be elevated in nearly any type of inflammatory condition or immune system reaction.	
Lab Test Explanation for Basos (Absolute) at Functional High: Basos (Absolute) NA	Special Instructions at Functional High:
Lab Test Explanation for Basos (Absolute) at Optimal: Basos (Absolute) Your result for this lab test is in the OPTIMAL range. Basos - more commonly referred to as Basophils - are one type of White Blood Cell. This lab test is a calculation to determine the actual or absolute number of Basophils within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Basophils can be helpful in determining what type infection or challenge to the immune system is taking place. Once Basophils enter the tissue they are then referred to as a Mast cell. Both Basophils and Mast cells contain small pockets of powerful chemicals like histamine, serotonin and heparin which alter blood supply to tissues, help prevent clotting in inflamed tissue, and help mobilize the body's immune system. Basophils can be elevated in nearly any type of inflammatory condition or immune system reaction.	Special Instructions at Optimal:
Lab Test Explanation for Basos (Absolute) at Functional Low: Basos (Absolute) NA	Special Instructions at Functional Low:
Lab Test Explanation for Basos (Absolute) at Clinical Low: Basos (Absolute) NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Immature Granulocytes	Clinical High	3 or higher								
	Functional High	NA								
	Optimal	0 - 2								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Immature Granulocytes at Clinical High:
Immature Granulocytes

Your result for this lab test is in the CLINICAL HIGH range. A Granulocyte is a different type of White Blood Cell that you would normally NOT see in a healthy person's blood. Granulocytes are given their name because they contain many granules - which are microscopic pockets filled with enzymes and chemicals to digest invading organisms. Neutrophils, Eosinophils and Basophils are all types of Granulocytes. The presence of Immature Granulocytes in the blood simply means that the bone marrow is releasing these granulocytes at a faster rate before some of them have had a chance to fully mature. This could happen with a severe infection or some type of disease process within the bone marrow. This lab test is to determine what percentage of total White Blood Cells are specifically Immature Granulocytes.

When Immature Granulocytes are in the Clinical High range we will consider many possible causes to include: 1) acute infections - including sepsis, 2) a variety of inflammatory disorders, 3) tissue damage, 4) the effect of some medications - such as steroids, and 5) some cancers or other diseases and disorders affecting the function of the bone marrow.

Special Instructions at Clinical High:

Lab Test Explanation for Immature Granulocytes at Functional High:
Immature Granulocytes

NA

Special Instructions at Functional High:

Lab Test Explanation for Immature Granulocytes at Optimal:
Immature Granulocytes

Your result for this lab test is in the OPTIMAL range. A Granulocyte is a different type of White Blood Cell that you would normally NOT see in a healthy person's blood. Granulocytes are given their name because they contain many granules - which are microscopic pockets filled with enzymes and chemicals to digest invading organisms. Neutrophils, Eosinophils and Basophils are all types of Granulocytes. The presence of Immature Granulocytes in the blood simply means that the bone marrow is releasing these granulocytes at a faster rate before some of them have had a chance to fully mature. This could happen with a severe infection or some type of disease process within the bone marrow. This lab test is to determine what percentage of total White Blood Cells are specifically Immature Granulocytes.

Special Instructions at Optimal:

Lab Test Explanation for Immature Granulocytes at Functional Low: Immature Granulocytes NA	Special Instructions at Functional Low:
Lab Test Explanation for Immature Granulocytes at Clinical Low: Immature Granulocytes NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Immature Grans (Abs)	Clinical High	0.2 or higher								
	Functional High	NA								
	Optimal	0.0 - 0.1								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Immature Grans (Abs) at Clinical High: Immature Grans (Abs) Your result for this lab test is in the CLINICAL HIGH range. A Granulocyte is a different type of White Blood Cell that you would normally NOT see in a healthy person's blood. Granulocytes are given their name because they contain many granules - which are microscopic pockets filled with enzymes and chemicals to digest invading organisms. Neutrophils, Eosinophils and Basophils are all types of Granulocytes. The presence of Immature Granulocytes in the blood simply means that the bone marrow is releasing these granulocytes at a faster rate before some of them have had a chance to fully mature. This could happen with a severe infection or some type of disease process within the bone marrow. This lab test is a calculation to determine the actual or absolute number of Immature Granulocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Immature Granulocytes can be helpful in determining what type infection or challenge to the immune system is taking place. When Immature Granulocytes are in the Clinical High range we will consider many possible causes to include: 1) acute infections - including sepsis, 2) a variety of inflammatory disorders, 3) tissue damage, 4) the effect of some medications - such as steroids, and 5) some cancers or other diseases and disorders affecting the function of the bone marrow.	Special Instructions at Clinical High:

Lab Test Explanation for Immature Grans (Abs) at Functional High: Immature Grans (Abs) NA	Special Instructions at Functional High:
Lab Test Explanation for Immature Grans (Abs) at Optimal: Immature Grans (Abs) Your result for this lab test is in the OPTIMAL range. A Granulocyte is a different type of White Blood Cell that you would normally NOT see in a healthy person's blood. Granulocytes are given their name because they contain many granules - which are microscopic pockets filled with enzymes and chemicals to digest invading organisms. Neutrophils, Eosinophils and Basophils are all types of Granulocytes. The presence of Immature Granulocytes in the blood simply means that the bone marrow is releasing these granulocytes at a faster rate before some of them have had a chance to fully mature. This could happen with a severe infection or some type of disease process within the bone marrow. This lab test is a calculation to determine the actual or absolute number of Immature Granulocytes within a blood sample. When the total White Blood Cell count is elevated or decreased . . . looking at the absolute count of Immature Granulocytes can be helpful in determining what type infection or challenge to the immune system is taking place.	Special Instructions at Optimal:
Lab Test Explanation for Immature Grans (Abs) at Functional Low: Immature Grans (Abs) NA	Special Instructions at Functional Low:
Lab Test Explanation for Immature Grans (Abs) at Clinical Low: Immature Grans (Abs) NA	Special Instructions at Clinical Low:

Lab Test Name	Reference Range Name	Reference Range Numbers	Recommended Product	Morning on wake-up dose	AM with Breakfast dose	Mid-Morning dose	Noon with Lunch dose	Mid-Afternoon dose	PM with Evening Meal dose	Before Bed dose
Sedimentation Rate (ESR)	Clinical High	41 or higher								
	Functional High	11 - 40								
	Optimal	0 - 10								
	Functional Low	NA								
	Clinical Low	NA								

Lab Test Explanation Sedimentation Rate (ESR) at Clinical High:
Sedimentation Rate (ESR)

Your result for this lab test is in the CLINICAL HIGH range. Sedimentation Rate - also called Erythrocyte Sedimentation Rate or ESR - is a measure of inflammation within the body, but it is considered non-specific because it does not tell us where the inflammation is located in the body or what is causing the inflammation. Red Blood Cells - also called Erythrocytes - tend to clump together when inflammation is present in the body. This makes the Red Blood Cells heavier and fall more rapidly to the bottom when placed in a special test tube. The faster the rate at which these cells fall and settle at the bottom of a test tube - the higher the Sedimentation Rate.

Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases that people suffer with when they get older. Identifying inflammation now and getting it under control could very well help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem.

When Sedimentation Rate is in the Clinical High range we will consider that there is likely some inflammation in the body . . . although we will not yet know the cause of the inflammation or where it is located. We will need to view this lab result in relation to other lab tests to see if we can determine the origin of this inflammation. Sometimes we cannot easily determine the cause of inflammation, but we will still want to take action to reduce the inflammation.

Special Instructions at Clinical High:

Lab Test Explanation for Sedimentation Rate (ESR) at Functional High:
Sedimentation Rate (ESR)

Your result for this lab test is in the FUNCTIONAL HIGH range. Sedimentation Rate - also called Erythrocyte Sedimentation Rate or ESR - is a measure of inflammation within the body, but it is considered non-specific because it does not tell us where the inflammation is located in the body or what is causing the inflammation. Red Blood Cells - also called Erythrocytes - tend to clump together when inflammation is present in the body. This makes the Red Blood Cells heavier and fall more rapidly to the bottom when placed in a special test tube. The faster the rate at which these cells fall and settle at the bottom of a test tube - the higher the Sedimentation Rate.

Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases

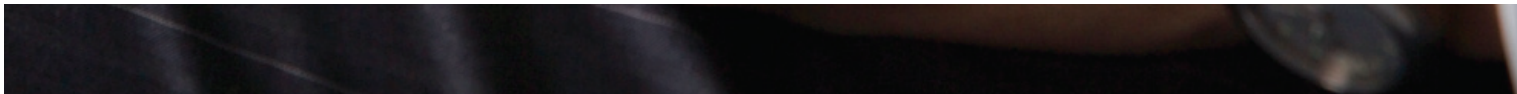
Special Instructions at Functional High:

that people suffer with when they get older. Identifying inflammation now and getting it under control could very well help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem. When Sedimentation Rate is in the Functional High range we will consider that there is likely some inflammation in the body . . . although we will not yet know the cause of the inflammation or where it is located. We will need to view this lab result in relation to other lab tests to see if we can determine the origin of this inflammation. Sometimes we cannot easily determine the cause of inflammation, but we will still want to take action to reduce the inflammation.	
Lab Test Explanation for Sedimentation Rate (ESR) at Optimal: Sedimentation Rate (ESR) Your result for this lab test is in the OPTIMAL range. Sedimentation Rate - also called Erythrocyte Sedimentation Rate or ESR - is a measure of inflammation within the body, but it is considered non-specific because it does not tell us where the inflammation is located in the body or what is causing the inflammation. Red Blood Cells - also called Erythrocytes - tend to clump together when inflammation is present in the body. This makes the Red Blood Cells heavier and fall more rapidly to the bottom when placed in a special test tube. The faster the rate at which these cells fall and settle at the bottom of a test tube - the higher the Sedimentation Rate. Inflammation has the nickname of the "silent killer" because inflammation often precedes many of the chronic diseases that people suffer with when they get older. Identifying inflammation now and getting it under control could very well help to prevent a health problem later in life, or at the very least help to reduce the severity of a future health problem.	Special Instructions at Optimal:
Lab Test Explanation for Sedimentation Rate (ESR) at Functional Low: Sedimentation Rate (ESR) NA	Special Instructions at Functional Low:
Lab Test Explanation for Sedimentation Rate (ESR) at Clinical Low: Sedimentation Rate (ESR) NA	Special Instructions at Clinical Low:

Modern Urine Chemistry—
The Clinical Significance of Urine Test Results

Answers for life.

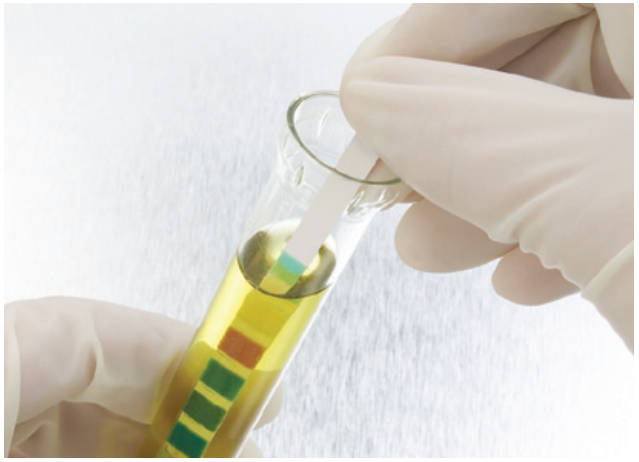
SIEMENS



One Simple Test, a Wealth of Information

Urinalysis is a fast, simple, inexpensive, and reliable tool for ruling in, or ruling out, many diseases related to carbohydrate metabolism, urinary tract health, kidney and liver function, acid-base balance, and many other medical conditions.[1,2]

Clinically relevant information can be obtained when analyzing the combined results of certain test parameters available on the urinalysis test strips. As with all laboratory tests, definitive diagnostic or therapeutic decisions should not be based on any single result or method.



Urinalysis testing

Diabetes

Persons at Risk

- Persons with:
  - Family history of diabetes
  - Obesity
  - High blood pressure
  - Coronary artery disease
  - History of gestational diabetes
  - Chronic pancreatitis
  - Hepatic disorders
  - Cystic fibrosis
- Chronic use of medications such as: high-dose glucocorticoids, chemotherapy agents (L-asparaginase), antipsychotics, and mood stabilizers (phenothiazines)
- High risk ethnicity: Hispanic (Latin American), American Indian, African American, Pacific Islander, and South Asian ancestry

Symptoms

Type 1:
- Excessive urination
- Excessive thirst
- Unexplained weight loss

Type 2:
- Excessive urination
- Excessive thirst
- Fatigue
- Leg or foot pain
- Tingling or numbness in hands/feet
- Ketoacidosis
- Hyperglycemia
- Dehydration
- Sudden vision changes
- Extreme hunger
- Dry skin
- Slow-healing sores
- Frequent infections

Important Tests

Leukocyte – Detects leukocyte esterase found in white blood cells

Nitrite – Detects nitrate-reducing (usually gram-negative) bacteria

Ketones – May detect early ketoacidosis in confirmed diabetics

Glucose – May detect unsuspected diabetes

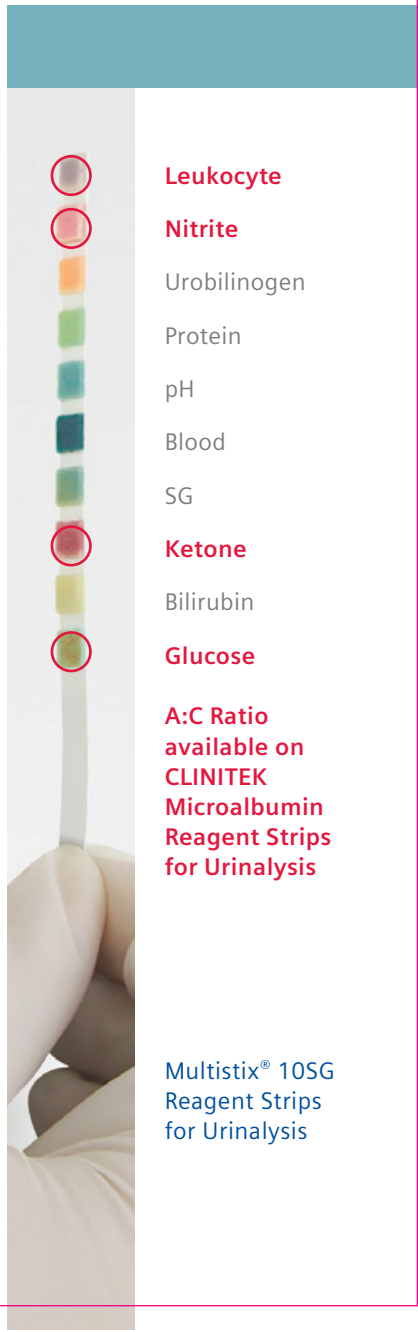
A:C Ratio (Microalbuminuria)* – May detect early kidney damage associated with diabetes (available on CLINITEK® Microalbumin Reagent Strips for Urinalysis)

These tests provide useful information regarding diabetes when performing a routine examination and/or managing people with confirmed diabetes.

The nitrite and leukocyte tests help detect urinary tract infections, which are relatively common complications of diabetes.

The ketone test helps assess the severity of diabetes and avoid progressive diabetic ketosis, which can eventually lead to coma and even death.

*NOTE: The American Diabetes Association recommends the annual measurement of microalbuminuria in all people with type 2 diabetes, and in people with type 1 diabetes with at least 5 years disease duration to aid in the early detection of kidney disease. A flow chart provided by the American Diabetes Association can be used as a guide to microalbuminuria testing.



Multistix® 10SG Reagent Strips for Urinalysis

Eating Disorders

Persons at Risk

Anorexia:
- Teenage girls
- Adult women
- Persons with:
  - Low self-esteem
  - Perfectionistic tendencies
  - Authoritarian parents
  - Family history of eating disorders
- Stress from:
  - Alcohol/drug abuse
  - Stressful home situations
  - Stress related to sports/ academic achievement
  - Professions that require thinness: modeling/ballet

Bulimia:
- Persons with:
  - Previous history of being overweight
  - Family history of eating disorders
  - Low self-esteem
  - History of physical, sexual, or relational trauma
- Working or aspiring professions that require thinness: acting, modeling, ballet, or gymnastics

Symptoms

Anorexia:
- Excessive dieting
- Excessive weight loss
- Underweight (85% of normal weight for age/height)
- Intense fear of gaining weight, even if underweight
- Distorted body image
- Menstrual cycle disruption (stopped altogether or missed 3 in a row)
- Overexercises
- Induces vomiting
- Inappropriate use of laxatives or diuretics
- Fainting or severe lightheadedness
- Constipation
- Depression/anxiety

Bulimia:
- Binge eating
- Self-induced vomiting
- Inappropriate use of laxatives or diuretics
- Overachieving behavior
- Dental cavities/gingivitis due to excessive vomiting
- Electrolyte imbalance/dehydration

Important Tests

Specific Gravity – A high value may indicate excessive vomiting

Ketones – Detects the presence of ketones in urine that may indicate starvation or vomiting

These tests, when analyzed in combination, provide useful information regarding proper hydration that may be compromised for people diagnosed with eating disorders, such as anorexia nervosa and bulimia nervosa.

Multistix 10SG Reagent Strips for Urinalysis

Kidney Disorders

Persons at Risk

Kidney Disease:
- Persons with:
  - Family history of kidney disease
  - Diabetes
  - High blood pressure
  - Autoimmune diseases
  - Systemic infections
  - History of urinary tract infections
  - Urinary stones
  - Lower urinary tract obstruction
  - Drug toxicity
- High risk ethnicity: Hispanic (Latin American), African American, Asian, Pacific Islanders, and American Indians
- Elderly

Kidney Stones:
- Persons with:
  - Dehydration
  - Excess amounts of Vitamin C or Vitamin D
  - High protein or sodium diets
  - Sedentary lifestyles
- Medications: Acetazolamide (Diamox) or Indinavir (Crixvan)

Symptoms

Kidney Disease:
- Increased frequency in urination, especially overnight
- Swelling in legs, ankles, feet, face, and/or hands
- Fatigue
- Skin rash/itching
- Metallic taste mouth/ammonia breath
- Nausea/vomiting
- Shortness of breath
- Feeling cold
- Trouble concentrating
- Dizziness
- Leg/flank pain

Kidney Stones:
- Lower back pain radiating to side or groin
- Pain during urination (stinging/burning)
- Blood in the urine (hematuria)
- Increased frequency in urination
- Nausea/vomiting
- Tenderness in the abdomen and kidney region
- Urinary tract infection
- Fever/chills
- Loss of appetite

Important Tests

Leukocyte – Indicates urinary tract infections that can lead to kidney disorders

Protein – Detects the presence of proteinuria which may be caused by kidney malfunction

pH – Used to determine type of kidney stone

Blood – Detects blood in urine which may indicate damage to the kidney

Specific Gravity and/or Creatinine – Provides a relative indication of urine concentration or dilution (Creatinine available on Multistix PRO®* Reagent Strips for Urinalysis)

Protein-to-Creatinine (P:C) Ratio and Albumin-to-Creatinine (A:C) Ratio – Corrects for varying urine concentration, which improves the accuracy of result interpretation, without a timed or 24-hour urine collection (P:C ratio available on Multistix PRO Reagent Strips for Urinalysis, and A:C ratio available on CLINITEK Microalbumin Reagent Strips for Urinalysis)

Ratio Tests:
Measure both protein and creatinine while simultaneously correcting for varying urine concentration.
- Effective for the clinical evaluation of people at risk of developing chronic kidney disease
- Able to be tested in both first morning or random, untimed "spot" urine specimens

A:C Ratio Tests:
A:C ratio tests are appropriate for testing people with confirmed diabetes. These tests are recognized by the American Diabetes Association for detecting very low level of albuminuria (microalbuminuria).

P:C Ratio Tests:
P:C ratio tests are appropriate for testing the broader population with associated kidney disease risk factors. These tests are recognized by the National Kidney Foundation for detecting higher levels of protein than A:C tests.

*Not available in all markets.

Multistix 10SG Reagent Strips for Urinalysis

Liver Disease or Damage

Persons at Risk

- Hepatitis A Infected Persons:
  - Exposure to fecal matter
- Hepatitis B Infected Persons:
  - IV drug users
  - Persons having unprotected sex with infected person
- Hepatitis C Infected Persons:
  - Exposure to contaminated needles for IV drug users
  - Persons with tattoos or body piercings
  - Persons having unprotected sex with multiple partners
- Persons with:
  - Excessive alcohol consumption habits
  - Obesity
  - Fatty liver
  - Long-term dialysis

Symptoms

- Jaundice
- Fatigue
- Weakness
- Weight loss
- Poor appetite
- Nausea
- Fever
- Low blood pressure
- Enlarged liver
- Fluid in the abdomen (ascites)
- Feeling of confusion
- Prolonged itching of the skin
- Bright red complexion
- Red palms

Important Tests

Urobilinogen – Serves as an aid in detecting and differentiating liver disease, hemolytic disease and biliary obstruction

Specific Gravity – Provides a relative indication of whether other tests results are affected by urine concentration or dilution

Bilirubin – May indicate abnormalities affecting the liver or biliary system

Bilirubin and Urobilinogen results, when considered together, provide more helpful information for differential diagnosis than either finding alone.[3]

Multistix 10SG Reagent Strips for Urinalysis

Pregnancy Related Disorders

Persons at Risk

Pre-eclampsia:
- First time pregnancy
- Multiple gestations
- Chronic hypertension
- Chronic diabetes
- Kidney disease
- Family history of eclampsia or pre-eclampsia
- Teenagers or women over 40
- High risk ethnicity: Hispanic, African American

Gestational Diabetes:
- Pregnant women
- Diabetic or family history or diabetes
- Past history or gestational diabetes
- High risk ethnicity: Hispanic (Latin American), African American, Native American, Southern or Eastern Asian, Pacific Islander or Indigenous Australian
- Obesity
- Greater than 25 years of age
- Still-birth or large baby with past pregnancy
- Polycystic ovarian disease

Symptoms

Pre-eclampsia:
- High blood pressure
- Swelling (Edema)
- Protein in urine

Gestational Diabetes:
- Increased thirst
- Increased urination
- Weight loss in spite of increased appetite
- Fatigue
- Nausea/vomiting
- Frequent infections including bladder, vaginal and skin
- Blurred vision

Important Tests

Pre-eclampsia:

Protein – May indicate pre-eclampsia during pregnancy

Urinary protein tests are performed to aid in the diagnosis of pre-eclampsia, a condition of hypertension and proteinuria that occurs in pregnancy and affects about 5–12% of all pregnancies.[5]

Gestational Diabetes:

Glucose – May indicate gestational diabetes

Urinary testing for glucosuria during pregnancy can detect gestational diabetes, which accounts for 88% of all pregnancies with diabetes present.[4]

Multistix 10SG Reagent Strips for Urinalysis

Sexually Transmitted Diseases (STD)

Persons at Risk

Gonorrhea:
- 15 to 19 year-old women
- 20 to 24 year-old men
- High-density urban areas
- Multiple sex partners
- Unprotected sexual intercourse
- Men having unprotected sex with other men

Syphilis:
- High-risk sexual activity
- Men having unprotected sex with other men
- HIV infected persons
- Previous history of Syphilis

Symptoms

Gonorrhea:

Women:
- Bleeding associated with vaginal intercourse
- Painful or burning sensations during urination
- Yellow or bloody vaginal discharge

Men:
- White, yellow or green pus from penis with pain
- Burning sensation during urination
- Swollen testicles
- Rectal infection: discharge and itching
- Painful bowel movements
- Fresh blood in feces
- Small, painless sore (chancre) on the part of body where infection is transmitted
- Enlarged lymph nodes in groin
- Skin rash and mucous membrane lesions
- Sore throat
- Patchy hair loss
- General symptoms such as fever, fatigue, loss of appetite, and aches and pains in bones
- Weight loss

Important Tests

Leukocyte – Detects leukocyte esterase found in white blood cells

Elevated test results may indicate detection of bacteria responsible for STDs.

Multistix 10SG Reagent Strips for Urinalysis

Urinary Disorders

Persons at Risk

Renal:
- Persons with:
  - History of smoking
  - Family history of renal cancer
  - Genetic condition: Hippel-Lindau disease
- Receiving dialysis

Bladder:
- Persons with:
  - History of smoking
  - Exposure to occupational carcinogens (dye workers, rubber workers, aluminum workers, leather workers, truck drivers, pesticide applicators)
  - Chronic bladder infections
- Women receiving radiation therapy for cervical cancer
- Patients treated with chemotherapy agents: Cyclophosphamide (Cytoxan)
- Elderly

Symptoms

Renal:
- Blood in urine (hematuria)
- Abnormal urine color (dark, rusty, or brown)
- Back pain/flank pain
- Abdominal pain/swelling
- Unintentional weight loss
- Enlargement of one testicle
- Vision abnormalities
- Excessive hair growth in females
- Constipation

Bladder:
- Blood in urine (hematuria)
- Urinary frequency
- Painful urination
- Urinary urgency
- Urinary incontinence
- Bone pain or tenderness
- Abdominal pain
- Anemia
- Weight loss
- Lethargy (tiredness)

Important Tests

Blood – May indicate damage to the kidney or urinary tract

Although there are many benign reasons for the presence of blood in urine, finding unexpected and unexplained blood in the urine requires follow-up to determine the cause and rule out the presence of cancer.

Multistix 10SG Reagent Strips for Urinalysis

Urinary Tract Infections (UTI)

Persons at Risk

Women:
- Pregnant Women
- Women with history of UTIs
- Menopausal women not taking estrogen
- Sexually active women

Men:
- Men with Prostatitis
- Men with Benign Prostatic Hyperplasia (BPH)
- HIV infected individuals

Women and Men:
- Catheterized patients
- Persons with kidney stones
- Diabetic persons

Symptoms

- Pain or burning during urination
- Urge for frequent urination
- Lower abdominal pain or heaviness
- Reddish or pinkish urine
- Cloudy urine
- Foul smelling urine
- Back pain just below rib cage (flank pain)
- Fever/chills
- Nausea/vomiting
- Diarrhea in young children

Important Tests

Leukocyte – Detects leukocyte esterase found in white blood cells

Nitrite – Detects nitrate-reducing, gram-negative bacteria

pH – Typically high or alkaline if UTI is present

Blood – May indicate damage to the urinary tract

In combination, these tests were found to be a better predictor of the presence or absence of UTI, than any one parameter alone.[6]

Urinalysis test strips are an effective "rule-out" tool for patients with suspected UTI. A key advantage of combining the results of leukocyte and nitrite is that if both tests are negative, very few UTIs will be missed.

Multistix 10SG Reagent Strips for Urinalysis

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6. Robertson, AW, Duff P. The nitrite and leukocyte esterase tests for the evaluation of asymptomatic bacteriuria in obstetrics. Obstet. Gynecol 1988; 71:878-881

Additional Information

www.my.webmd.com
www.urologychannel.com
www.lifeoptions.org
www.kidney.org
www.cdc.gov/diabetes
www.diabetes.org
www.nichd.nih.gov
www.familydoctor.org
www.mayoclinic.com
www.nlm.nih.gov

Siemens Healthcare Diagnostics, a global leader in clinical diagnostics, provides healthcare professionals in hospital, reference, and physician office laboratories and point-of-care settings with the vital information required to accurately diagnose, treat, and monitor patients. Our innovative portfolio of performance-driven solutions and personalized customer care combine to streamline workflow, enhance operational efficiency, and support improved patient outcomes.

Product availability may vary from country to country and is subject to varying regulatory requirements. Please contact your local representative for availability.

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