

<b>Patient Name</b> TESTING,90431	<b>Patient ID</b>	<b>Age</b>	<b>Gender</b>	<b>Order #</b> W2978256
<b>Ordering Phys</b>		<b>DOB</b>		
<b>Client Order #</b> W2978256	<b>Account Information</b> C7999998-STUSTEST 200 FIRST STREET SW ROCHESTER, MN 55901		<b>Report Notes</b>	
<b>Collected</b> 10/20/2009 06:00				
<b>Printed</b> 10/20/2009 12:26	(507)266-5730			

Test	Flag	Results	Unit	Reference Value	Perform Site*
<b>Vitamin B12 Deficiency Panel</b>			REPORTED 10/20/2009 11:55		
Methylmalonic Acid		252	nmol/L	73-271	
2-Methylcitric Acid		150	nmol/L	60-228	
Homocysteine		9.8	umol/L	5.1-13.9	
Cystathionine		225	nmol/L	44-342	
<b>INTERPRETATION:</b>					
	NORMAL	B12 DEFICIENCY	FOLATE DEFICIENCY		
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Metabolite-	%HIGH	%HIGH	%HIGH	%HIGH	%HIGH
	RANGE VALUES	RANGE VALUES	RANGE VALUES	RANGE VALUES	RANGE VALUES
<hr/>					
Methylmalonic Acid:					
	73-271 <3	271-200,000 >95	73-271	<3	
2-Methylcitric Acid:					
	60-228 <3	228-15,000 >80	60-228	<3	
Homocysteine:					
	5.1-13.9 <3	14-500 >95	14-250	>95	
Cystathionine:					
	44-342 <3	342-4000 >80	342-18,000	>80	

NOTE 1) Serum Methylmalonic Acid and Homocysteine are the primary metabolic tests for diagnosing and distinguishing between B12 and folate deficiency. They can be used in conjunction with the serum B12 which is usually low or low normal (<350 pg/mL) in B12 deficiency and the serum folate which is usually low or low normal (<5 ng/mL) in folate deficiency. 2-Methylcitric Acid and Cystathionine provide confirmatory evidence for such deficiencies. Homocysteine and especially Cystathionine may also be high in B6 deficiency.

NOTE 2) Elevated levels of serum metabolites will correct to normal after treatment with the appropriate vitamin but will not correct after treatment with the wrong vitamin, even in pharmacologic amounts.

NOTE 3) Any of the four metabolites can be elevated due to renal insufficiency or intravascular volume depletion. This occurs most commonly in the case of 2-Methylcitric Acid and Cystathionine. Elevated metabolite levels do not correct with B12, folate or B6 treatment unless vitamin deficiency coexists.

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\* Report times for Mayo performed tests are CST/CDT

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NOTE 4) Serum metabolite levels can be rechecked 5 to 15 days after vitamin therapy.

NOTE 5) Normal ranges 6 hours post oral Methionine load (100 mg L-Methionine/kg body wt.) are as follows: Homocysteine 16.5-45.7 umoles/Liter and Cystathionine 424-2500 nmoles/Liter. Methylmalonic Acid and 2-Methylcitric Acid do not change after a Methionine load.

Test Performed by: Metabolite Laboratories, Inc.  
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 Aurora, CO 80045

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