

Lesson 3.13: Body Systems Work Together

Task	Page(s)	Learning Target
1	2-4	I can describe structures and functions of the human body systems.
2	5-7	I can describe how body systems work together to maintain homeostasis
3	8-16	I can analyze patient health data in order to classify body system conditions.

Task 1 Learning Target: I can describe structures and functions of the human body systems.

Directions: For each body system, describe the structures and functions.

You may use bullet points but be specific.

Body System	Structures	Functions
Integumentary System (Skin)	1. _____: top layer, mostly dead with melanin 2. Dermis: (thick, middle layer with nerves, _____ vessels, and sweat glands) 3. _____: _____	1. _____ Melanin function: _____ 2. Nerves _____ Blood vessels _____ _____ Sweat Glands _____ Makes vitamin _____ (helps _____ absorb calcium) 3. Insulates: _____
Muscular System	1. Skeletal: 2. _____: 3. _____:	1. Skeletal muscles move _____ 2. _____ 3. _____
Skeletal System	Bone Marrow: _____ Periosteum: _____ Ribs Skull Spine	Bone Marrow function: Periosteum function: Bones support and protect the body Ribs protect _____ Skull protects _____ Spine protects _____
Nervous System	CNS (Central Nervous System): _____ and _____ PNS (Peripheral Nervous System): _____	Responds to _____ Voluntary Actions: Involuntary Actions:

<p>Circulatory System</p>	<p>1. _____: size of fist made of _____ muscle</p> <p>2. _____: tubes</p> <p>3. _____: biconcave disks</p>	<p>1. Heart Function:</p> <p>2. Regulates Temperature by</p> <p>3. Transport _____ _____</p>
<p>Digestive System</p>	<p>- Mouth</p> <p>-Esophagus: _____</p> <p>-Stomach: _____</p> <p>-Small Intestine: _____</p> <p>-Large Intestine: _____</p> <p>-Rectum/Anus</p>	<p>-Breaks down _____ into smaller particles to be used by cells for _____.</p> <p>-Villi in the small intestine: _____ _____</p> <p>- _____ move food throughout the digestive system with involuntary muscle contractions.</p>
<p>Respiratory System</p>	<p>-mouth/ nose</p> <p>-trachea (held open by by rings made of _____)</p> <p>-bronchi</p> <p>-alveoli: look like _____</p> <p>-lungs</p> <p>-diaphragm</p>	<p>-Provide _____ to the cells for respiration</p> <p>-Removes _____ as waste</p> <p>At the alveoli _____</p> <p>The function of the diaphragm is _____ _____</p> <p>The brain signals the epiglottis _____ _____</p>

<p>Excretory System</p>	<p>-skin -lungs -urinary system -kidneys _____ -ureters _____ -bladder _____ -urethra _____ -nephrons _____</p>	<p>Removes cellular _____</p> <p>-Skin removes _____</p> <p>-Lungs remove _____</p> <p>*Nephrons in the kidneys filter _____</p>
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Task 2 Learning Target: I can describe how body systems work together to maintain homeostasis

Name: _____ # _____

Essential Question: How do body systems work together to maintain homeostasis?

	Skeletal System	Muscular System	Digestive System	Respiratory System	Circulatory System	Excretory System	Nervous System	Integumentary System
Skeletal System	1.		2.	3.	4.	5.	6.	7.
Muscular System	8.	9.		10.	11.	12.	13.	14.
Digestive System	15.	16.	17.		18.	19.	20.	21.
Respiratory System	22.	23.	24.	25.		26.	27.	28.

	Skeletal System	Muscular System	Digestive System	Respiratory System	Circulatory System	Excretory System	Nervous System	Integumentary System
Circulatory System	29.	30.	31.	32.	33.	33.	34.	35.
Excretory System	36.	37.	38.	39.	40.	41.	41.	42.
Nervous System	43.	44.	45.	46.	47.	48.	49.	49.
Integumentary System	50.	51.	52.	53.	54.	55.	56.	57.

Resource Links:

<https://sites.google.com/a/ps207tigers.org/207sci/body-systems-work-together-skit>

<https://drive.google.com/file/d/1XopWoZSIoUU85kUTCNh-5qHEguFbjl4o/view?usp=drivesdk>

- A) Skeletal muscles move bones.
- B) Neurons carry impulses that direct voluntary and involuntary movements.
- C) Impulses from the brain signal muscles in the chest to contract and relax so that air can enter and exit.
- D) The epidermis produces vitamin D in the presence of sunlight, which is essential for calcium absorption.
- E) Smooth muscles are responsible for peristalsis.
- F) The blood vessels in the periosteum provide bone with nutrients and oxygen.
- G) Bones of the spine protect the spinal cord.
- H) The ribs protect the lungs.
- I) The periosteum contains nerves that can detect pain.
- J) Red blood cells are made in bone marrow.
- K) The dermis contains blood vessels, which help to regulate body temperature.
- L) Oxygen from the lungs is carried by red blood cells to individual cells so that energy can be released from digested food.
- M) Nephrons in the kidneys filter blood and rid the body of wastes produced by cells.
- N) The beating of the heart is controlled by the autonomic division of the PNS.
- O) When we exhale carbon dioxide is released from body.
- P) Oxygen from the lungs is carried by red blood cells to individual cells so that energy can be released from digested food.
- Q) Nephrons in the kidneys filter blood.
- R) The bladder contracts to release urine.
- S) Perspiration rids the body of cellular waste.
- T) Cells of the dermis need oxygen for cellular respiration.
- U) Nerves in the bladder signal the brain that it is full.

LT: I can analyze patient health data in order to classify body system conditions.

Use the Reference Tables (pages 8-9) to complete the Patient Charts (pages 10-15) and diagnosis page (page 16).

		Weight in Pounds (lbs)																				
Height (ft.)	5'	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200
	5'1"	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
	5'2"	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	5'3"	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
	5'4"	17	18	18	19	20	21	22	23	24	25	26	27	28	29	30	31	31	32	33	34	35
	5'5"	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33
	5'6"	16	17	17	18	19	20	21	21	22	23	24	25	26	27	28	29	29	30	31	32	33
	5'7"	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31
	5'8"	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31
	5'9"	14	15	16	17	17	18	19	20	21	22	23	24	25	25	26	27	28	28	29	30	31
	5'10"	14	15	15	16	17	18	18	19	20	20	21	22	23	24	24	25	25	26	27	28	28
	5'11"	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28
	6'	13	14	14	15	16	17	17	18	19	20	21	21	22	23	23	24	25	25	26	27	27
	6'1"	13	13	14	15	15	16	17	17	18	19	20	21	21	22	23	23	24	25	25	26	26
6'2"	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	
		Underweight <19				Healthy 19 - 24				Overweight 25 - 30				Obese >30								

Utilizing BMI charts, doctors understand the limitations (i.e., the weight of muscle mass) that these charts have in determining whether or not a person is healthy internally. For instance, men and women are not always assessed using the same BMI chart. Nor should children be assessed using the same BMI chart as adults. BMI charts can, however, be used in combination with other diagnostic tools (i.e., urinalysis, blood smears, glucose tolerance tests) for determining a range of health conditions. The BMI chart provided is specifically for adults considering the ages of the 3 patients. However, BMI charts have been modified for children and different genders.

	If the urine is...	What it could indicate is...
Color	Dark yellow	-dehydration or fever
	Pale light yellow	-patient drank a lot of liquids prior -diabetes
	Red with blood	-damage to kidneys
Odor	Fruity	-the presence of ketones (breakdown of fat), which can be a product of diabetes or starvation
	Foul	-the presence of bacteria
Transparency	Clear	-normal urine samples appear clear/transparent
	Cloudy	-old samples could appear cloudy if bacteria have had time to grow on it -fresh samples could appear cloud if a urinary tract infection (UTI) is present (bacteria in the urethra) -fresh samples could appear cloudy if there are blood cells or pus
Sugar	Present	-patient ate a meal rich in carbohydrates prior to visit -a period of stress -diabetes
Protein	Present	-an abnormal condition called protein urea, that could result from the damage to kidneys

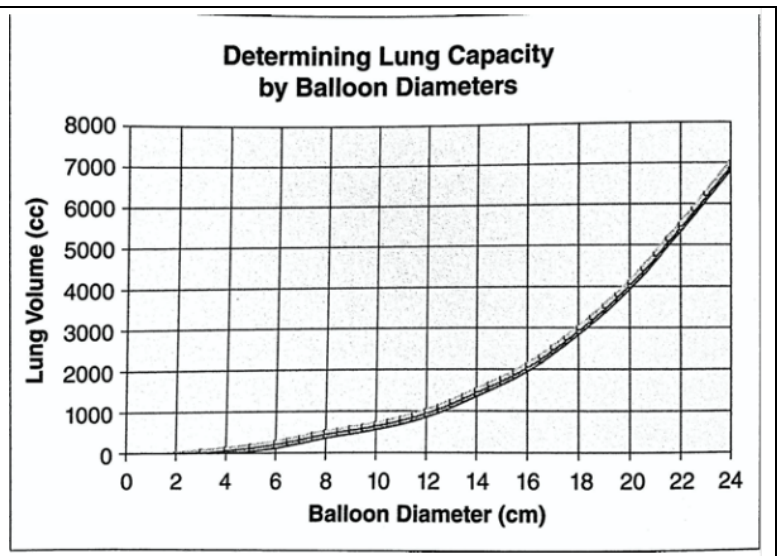
When patients provide a urine sample, it is sent to a laboratory and three tests are performed: visual, chemical, and microscopic. Visually, doctors will look for: color and transparency.

Some chemical tests performed by doctors, in addition to glucose and protein, are solute concentrations, pH levels, ketones, blood, nitrites, and so forth. To test for the presence of sugar, a glucose strip is dipped into the urine sample, indicating the level of sugar present. Protein is tested in a similar fashion.

Microscopic examinations are typically not done unless there is cause for concern (i.e., blood in the urine).

	Function	Healthy if...	Unhealthy if...
Red Blood Cells	Uses the protein, hemoglobin, to carry oxygen around the body	Shaped like a donut Female RBC count: 4.2 - 5.4 million cells per microliter (cells/mcL) Male RBC count: 4.7 - 6.1 million cells per microliter (cells/mcL)	Shaped like a sickle, indicating a genetic disorder called sickle cell anemia. If lower than the normal, could indicate anemia. If higher than normal, could indicate polycythemia, a disorder of the bone marrow.
White Blood Cells	Helps fight infections by engulfing foreign agents and producing antibodies against foreign agents	WBC count = 4,300 - 10,800 cells per microliter (cells/mcL)	If lower than normal, could indicate viral infections like HIV, low immunity and bone marrow failure. If higher than normal, could indicate infection, inflammation, allergy, leukemia, and tissue injury caused by burns, or pregnancy.

Reference Table 4: Lung Capacity	
People with Larger Volumes and Unrestricted Breathing	People with Smaller Volumes and Compromised Breathing
Males	Females
Taller people	Shorter people
Nonsmokers	Smokers
Athletes	Non-athletes
People living at high altitudes	People living at low altitudes
Nonpregnant women	Pregnant women
Healthy weight	Obesity
Normal red blood cells	Sickle cell anemia
Healthy respiratory tracts	Restricted respiratory tracts



In order to determine if a patient's lungs are being compromised, a doctor will use a tool called a spirometer. A spirometer contains a tube for patients to blow into. The patient may be asked to alter his or her breathing (i.e., fast, slow, or deep).

When checking for lung volume, doctors will also use a machine called a plethysmograph. This procedure entails patients sitting in a booth, breathing in a tube, and doctor's measuring a change in pressure within the booth, to determine lung volume. Finally, if a doctor wants to determine how much dissolved oxygen is in his/her patient's bloodstream, he or she may request a pulse oximetry test, which requires the patient to attach a sensor to his or her ear or finger.

An alternative means for estimating one's actual and acceptable lung capacities is used in this lab. Both are perfectly good tools for determining our patients' lung capacities since they factor in height, weight, and gender. However, spirometers provide less room for error since they do not require the doctor to perform measurements and calculations.

Reference Table 5: Insulin and Glucose Levels				
Insulin	Increased levels could indicate		Decreased levels could indicate	
	-Drugs such as corticosteroids, levodopa, and oral contraceptives -Fructose or galactose intolerance -Excessive exercising		-Diabetes -Pancreatic diseases such as chronic pancreatitis and pancreatic cancer	
Glucose (mg/dl)	Normal		Diabetic	
	Fasting	2 hrs	Fasting	2 hrs
	<110	<140	>126	>200

To determine if someone is diabetic, a doctor must provide patients with a glucose tolerance test. This test records how quickly sugar is cleared from the blood stream. The test is most frequently used to determine if a person is diabetic. The patient in question is required to fast 8 to 14 hours before they take the test. Only water is allowed. The patient is then given a glucose solution to drink. Blood is drawn at different intervals, and glucose levels are measured each hour. The glucose levels following the 2-hour mark are the most critical in determining if a person is diabetic. Glucose levels above 200 mg/ dl show that insulin levels are low, suggesting diabetes.

Patient Name: Jane Smith

Date of Birth: 03/18/1954

Sex: F

Height: 5'6" (167.6 cm)

Weight: 200 lbs (90.7 kg)

Reason for Visit: Patient had a dizzy spell and fainted; vision seems blurry.

Current medications: none

Personal Medical History	<input type="checkbox"/> Cancer <input type="checkbox"/> Diabetes <input type="checkbox"/> Eczema <input type="checkbox"/> Glaucoma <input type="checkbox"/> Heart problems <input type="checkbox"/> Heart attack <input checked="" type="checkbox"/> Hypertension	<input type="checkbox"/> High Cholesterol <input type="checkbox"/> Kidney disease <input type="checkbox"/> Migraine headaches <input type="checkbox"/> Osteoporosis <input type="checkbox"/> Stroke <input checked="" type="checkbox"/> Thyroid Problem <input type="checkbox"/> Other _____
<input type="checkbox"/> Alcoholism <input type="checkbox"/> Anemia <input type="checkbox"/> Arthritis/other joint issue <input type="checkbox"/> Asthma <input type="checkbox"/> Bleeding problem <input type="checkbox"/> Blood Transfusion(s)		

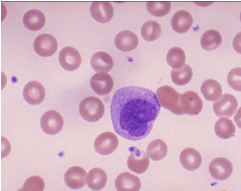
Social History Tobacco Use/# of packs per day/Quit Date: none Alcohol Use/# of drinks per week: 1/week Recreational drugs: no Needles: no	Exercise Regularly: no Sexually active: yes Safe sex: committed relationship so not always History of STDs: no
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Family History	M	D	S	B		M	D	S	B
	o	a	i	r		o	a	i	r
	m	d	s	o		m	d	s	o
Alcoholism					Heart problems				
Anemia					Heart attack			<input checked="" type="checkbox"/>	
Arthritis/other joint issue					Hypertension	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Asthma					High Cholesterol			<input checked="" type="checkbox"/>	
Bleeding problem/ coagulation disorder					Kidney disease				
Blood Transfusion(s)					Migraine headaches				
Cancer	<input checked="" type="checkbox"/>				Osteoporosis				
Diabetes (Type 1/Type 2)			<input checked="" type="checkbox"/>		Stroke			<input checked="" type="checkbox"/>	
Eczema					Thyroid Problem	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Glaucoma					Other				

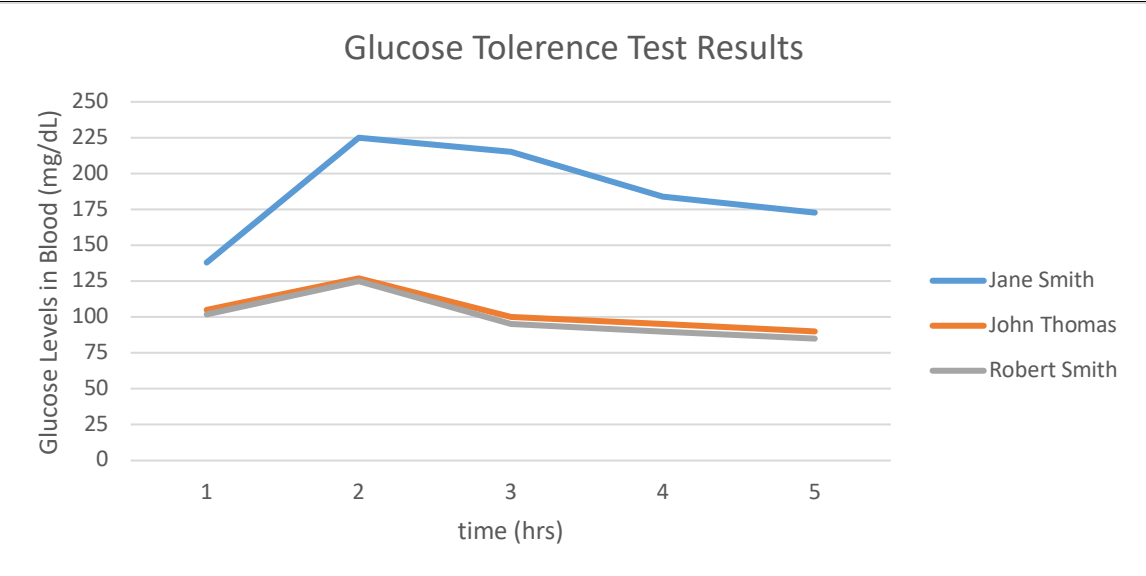
Current Symptoms: <i>Constitutional</i> <input type="checkbox"/> fever/chills/sweats <input checked="" type="checkbox"/> unexplained weight gain/loss <input checked="" type="checkbox"/> fatigue/ weakness <input checked="" type="checkbox"/> excessive thirst or urination <i>Eyes</i> <input checked="" type="checkbox"/> change in vision <i>Ears/Nose/Throat/Mouth</i> <input type="checkbox"/> difficult hearing/ ear ringing <input type="checkbox"/> problems with teeth/gums <input type="checkbox"/> allergies <i>Cardiovascular</i> <input type="checkbox"/> chest pain/ discomfort <input type="checkbox"/> leg pain with exercise <input type="checkbox"/> palpitations <i>Chest (breast)</i> <input type="checkbox"/> lump or discharge	<i>Respiratory</i> <input type="checkbox"/> cough/wheeze <input checked="" type="checkbox"/> difficulty breathing <i>Gastrointestinal (digestive)</i> <input type="checkbox"/> abdominal pain <input type="checkbox"/> blood in bowl movement <input type="checkbox"/> nausea/vomiting/diarrhea <i>Genitourinary</i> <input type="checkbox"/> nighttime urination <input type="checkbox"/> leaking urine <input type="checkbox"/> unusual vaginal bleeding <input type="checkbox"/> discharge from penis/vagina <i>Musculo-skeletal</i> <input type="checkbox"/> muscle/joint pain <i>Skin</i> <input type="checkbox"/> rash or mole change	<i>Neurological</i> <input checked="" type="checkbox"/> headache <input checked="" type="checkbox"/> dizziness/light-headedness <input checked="" type="checkbox"/> numbness <input type="checkbox"/> memory loss <input type="checkbox"/> loss of coordination <i>Psychiatric</i> <input type="checkbox"/> anxiety/ stress <input checked="" type="checkbox"/> problems with sleep <input type="checkbox"/> depression <i>Blood/Lymphatic (immune)</i> <input type="checkbox"/> unexplained lumps <input type="checkbox"/> easy bruising/ bleeding <input type="checkbox"/> Other _____
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Patient Data Table 1: BMI				
BMI (#): _____	<input type="checkbox"/> Healthy	<input type="checkbox"/> Underweight	<input type="checkbox"/> Overweight	<input type="checkbox"/> Obese

Patient Data Table 2: Urine Testing		
Urination Habits	Excessive Urination	Indication(s):
Color	Pale yellow/ brown tint	
Odor	Fruity	
Transparency	Clear	
Sugar present	Yes	
Protein present	No	

Patient Data Table 3: Blood Testing		
Blood Smear	RBC # (million cells/mcL):	WBC # (cells/mcL):
	4.4	7,004
	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low

Patient Data Table 4: Lung Capacity Testing		
Circumference (cm)	50	Acceptable Lung Capacity (cc): Find Body Surface Area (BSA) $\sqrt{\frac{\text{Height (cm)} \times \text{Weight (kg)}}{3600}}$ If female: BSA x 2000 If male: BSA x 2500
Radius (cm) $r = C/2\pi$		
Diameter (cm) $d = 2r$		
Lung Capacity * Refer to Reference Table 4		
<input type="checkbox"/> Capacity is normal <input type="checkbox"/> Capacity is too high <input type="checkbox"/> Capacity is too low		

Patient Data Table 5: Glucose Tolerance																										
<div style="text-align: center;"> <h3>Glucose Tolerance Test Results</h3>  <table border="1"> <caption>Glucose Tolerance Test Results Data</caption> <thead> <tr> <th>Time (hrs)</th> <th>Jane Smith (mg/dL)</th> <th>John Thomas (mg/dL)</th> <th>Robert Smith (mg/dL)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~135</td> <td>~100</td> <td>~100</td> </tr> <tr> <td>2</td> <td>~225</td> <td>~125</td> <td>~125</td> </tr> <tr> <td>3</td> <td>~215</td> <td>~100</td> <td>~95</td> </tr> <tr> <td>4</td> <td>~185</td> <td>~95</td> <td>~90</td> </tr> <tr> <td>5</td> <td>~175</td> <td>~90</td> <td>~85</td> </tr> </tbody> </table> </div>			Time (hrs)	Jane Smith (mg/dL)	John Thomas (mg/dL)	Robert Smith (mg/dL)	1	~135	~100	~100	2	~225	~125	~125	3	~215	~100	~95	4	~185	~95	~90	5	~175	~90	~85
Time (hrs)	Jane Smith (mg/dL)	John Thomas (mg/dL)	Robert Smith (mg/dL)																							
1	~135	~100	~100																							
2	~225	~125	~125																							
3	~215	~100	~95																							
4	~185	~95	~90																							
5	~175	~90	~85																							
Glucose Level (mg/dL) after two hours:	<input type="checkbox"/> Above 200	<input type="checkbox"/> Between 145-200 <input type="checkbox"/> Below 145																								
Insulin Levels must be:	<input type="checkbox"/> Low	<input type="checkbox"/> Borderline <input type="checkbox"/> Normal																								

Patient Name: John Thomas

Date of Birth: 03/01/1989 **Sex:** M

Height: 6'2" (188.0 cm)

Weight: 140 lbs (63.5 kg)

Reason for Visit: Patient has strange rash, fever, and chills.

Current medications: none

Personal Medical History	<input type="checkbox"/> Cancer <input type="checkbox"/> Diabetes <input type="checkbox"/> Eczema <input type="checkbox"/> Glaucoma <input type="checkbox"/> Heart problems <input type="checkbox"/> Heart attack <input type="checkbox"/> Hypertension	<input type="checkbox"/> High Cholesterol <input type="checkbox"/> Kidney disease <input type="checkbox"/> Migraine headaches <input type="checkbox"/> Osteoporosis <input type="checkbox"/> Stroke <input type="checkbox"/> Thyroid Problem <input type="checkbox"/> Other _____
<input type="checkbox"/> Alcoholism <input type="checkbox"/> Anemia <input type="checkbox"/> Arthritis/other joint issue <input type="checkbox"/> Asthma <input type="checkbox"/> Bleeding problem <input type="checkbox"/> Blood Transfusion(s)		

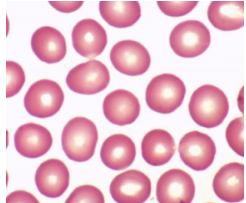
Social History Tobacco Use/# of packs per day/Quit Date: 1 pack per day; smoked for 3 years Alcohol Use/# of drinks per week: 3/week Recreational drugs: no Needles: no	Exercise Regularly: yes Sexually active: yes Safe sex: sometimes condoms History of STDs: yes; gonorrhea
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Family History	M	D	S	B		M	D	S	B
	o	a	a	r		o	a	a	r
	m	d	s	o		m	d	s	o
Alcoholism			X		Heart problems				
Anemia					Heart attack				
Arthritis/other joint issue					Hypertension	X	X		
Asthma					High Cholesterol				
Bleeding problem/ coagulation disorder					Kidney disease				
Blood Transfusion(s)					Migraine headaches	X			X
Cancer		X			Osteoporosis				
Diabetes (Type 1/Type 2)					Stroke				
Eczema					Thyroid Problem				
Glaucoma			X		Other				

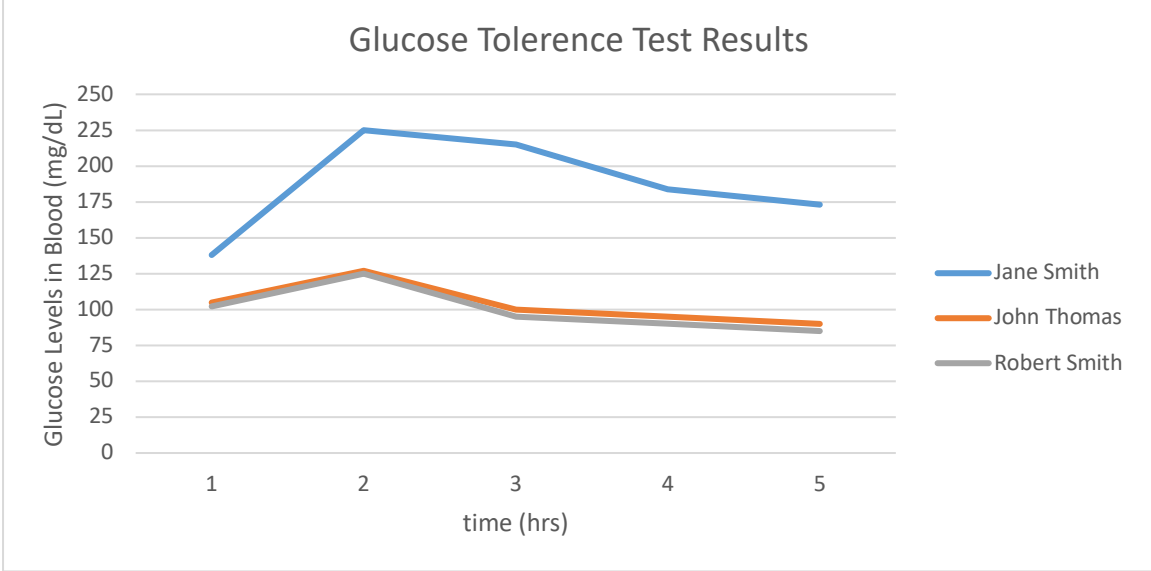
Current Symptoms: <i>Constitutional</i> <input checked="" type="checkbox"/> fever/chills/sweats <input checked="" type="checkbox"/> unexplained weight gain/ loss <input checked="" type="checkbox"/> fatigue/ weakness <input type="checkbox"/> excessive thirst or urination <i>Eyes</i> <input checked="" type="checkbox"/> change in vision <i>Ears/Nose/Throat/Mouth</i> <input type="checkbox"/> difficult hearing/ ear ringing <input type="checkbox"/> problems with teeth/gums <input type="checkbox"/> allergies <i>Cardiovascular</i> <input type="checkbox"/> chest pain/ discomfort <input type="checkbox"/> leg pain with exercise <input type="checkbox"/> palpitations <i>Chest (breast)</i> <input type="checkbox"/> lump or discharge	<i>Respiratory</i> <input type="checkbox"/> cough/wheeze <input type="checkbox"/> difficulty breathing <i>Gastrointestinal (digestive)</i> <input type="checkbox"/> abdominal pain <input type="checkbox"/> blood in bowl movement <input checked="" type="checkbox"/> nausea/vomiting/ diarrhea <i>Genitourinary</i> <input type="checkbox"/> nighttime urination <input type="checkbox"/> leaking urine <input type="checkbox"/> unusual vaginal bleeding <input checked="" type="checkbox"/> discharge from penis/vagina <i>Musculo-skeletal</i> <input type="checkbox"/> muscle/joint pain <i>Skin</i> <input checked="" type="checkbox"/> rash or mole change	<i>Neurological</i> <input type="checkbox"/> headache <input checked="" type="checkbox"/> dizziness/light-headedness <input type="checkbox"/> numbness <input type="checkbox"/> memory loss <input type="checkbox"/> loss of coordination <i>Psychiatric</i> <input type="checkbox"/> anxiety/ stress <input type="checkbox"/> problems with sleep <input type="checkbox"/> depression <i>Blood/Lymphatic (immune)</i> <input checked="" type="checkbox"/> unexplained lumps <input type="checkbox"/> easy bruising/ bleeding <input type="checkbox"/> Other _____
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Patient Data Table 1: BMI				
BMI (#): _____	<input type="checkbox"/> Healthy	<input type="checkbox"/> Underweight	<input type="checkbox"/> Overweight	<input type="checkbox"/> Obese

Patient Data Table 2: Urine Testing		
Urination Habits	N/A	Indication(s):
Color	Bright yellow	
Odor	Foul	
Transparency	Cloudy	
Sugar present	No	
Protein present	Yes	

Patient Data Table 3: Blood Testing		
	RBC # (million cells/mcL):	WBC # (cells/mcL):
	5.1	2,029
	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low

Patient Data Table 4: Lung Capacity Testing		
Circumference (cm)	57	Acceptable Lung Capacity (cc): Find Body Surface Area (BSA) $\sqrt{\frac{\text{Height (cm)} \times \text{Weight (kg)}}{3600}}$ If female: BSA x 2000 If male: BSA x 2500
Radius (cm) $r = C/2\pi$		
Diameter (cm) $d = 2r$		
Lung Capacity *Refer to Reference Table 4		
<input type="checkbox"/> Capacity is normal <input type="checkbox"/> Capacity is too high <input type="checkbox"/> Capacity is too low		

Patient Data Table 5: Glucose Tolerance			
<h3>Glucose Tolerance Test Results</h3> 			
Glucose Level (mg/dL) after two hours:	<input type="checkbox"/> Above 200	<input type="checkbox"/> Between 145-200	<input type="checkbox"/> Below 145
Insulin Levels must be:	<input type="checkbox"/> Low	<input type="checkbox"/> Borderline	<input type="checkbox"/> Normal

Patient Name: Robert Smith

Date of Birth: 10/14/1982 **Sex:** M

Height: 5'8" (172.7 cm)

Weight: 155 lbs (70.3 kg)

Reason for Visit: had some difficulty breathing; weak after recent concert

Current medications: none

Personal Medical History	<input type="checkbox"/> Cancer <input type="checkbox"/> Diabetes <input type="checkbox"/> Eczema <input type="checkbox"/> Glaucoma <input type="checkbox"/> Heart problems <input type="checkbox"/> Heart attack <input type="checkbox"/> Hypertension	<input type="checkbox"/> High Cholesterol <input type="checkbox"/> Kidney disease <input type="checkbox"/> Migraine headaches <input type="checkbox"/> Osteoporosis <input type="checkbox"/> Stroke <input type="checkbox"/> Thyroid Problem <input type="checkbox"/> Other _____
<input type="checkbox"/> Alcoholism <input type="checkbox"/> Anemia <input type="checkbox"/> Arthritis/other joint issue <input type="checkbox"/> Asthma <input type="checkbox"/> Bleeding problem <input type="checkbox"/> Blood Transfusion(s)		

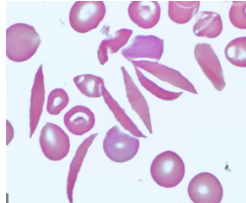
Social History Tobacco Use/# of packs per day/Quit Date: 1 pack per day; smoked for 2 years; quit 2 months ago Alcohol Use/# of drinks per week: 5/week Recreational drugs: not anymore Needles: no	Exercise Regularly: yes Sexually active: yes Safe sex: sometimes condoms History of STDs: yes; chlamydia
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Family History	M	D	S	B		M	D	S	B
	o	a	a	r		o	a	a	r
	m	d	s	o		m	d	s	o
Alcoholism					Heart problems				
Anemia	X			X	Heart attack				
Arthritis/other joint issue					Hypertension				
Asthma					High Cholesterol				
Bleeding problem/ coagulation disorder	X			X	Kidney disease				
Blood Transfusion(s)					Migraine headaches				
Cancer					Osteoporosis				
Diabetes (Type 1/Type 2)					Stroke				
Eczema					Thyroid Problem				
Glaucoma		X			Other				

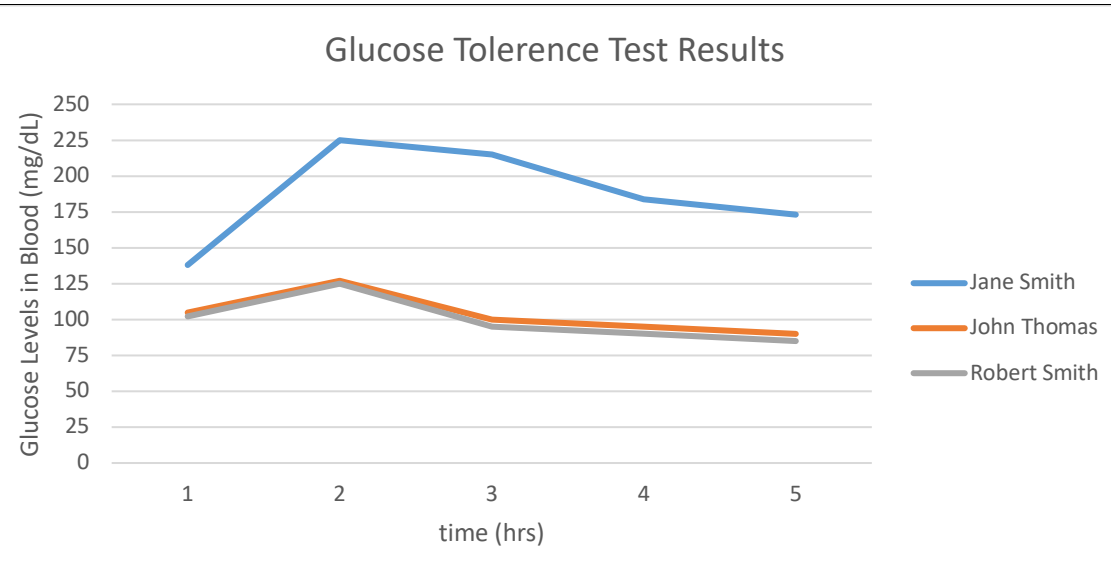
Current Symptoms: <i>Constitutional</i> <input type="checkbox"/> fever/chills/sweats <input type="checkbox"/> unexplained weight gain/ loss <input checked="" type="checkbox"/> fatigue/ weakness <input type="checkbox"/> excessive thirst or urination <i>Eyes</i> <input type="checkbox"/> change in vision <i>Ears/Nose/Throat/Mouth</i> <input type="checkbox"/> difficult hearing/ ear ringing <input type="checkbox"/> problems with teeth/gums <input type="checkbox"/> allergies <i>Cardiovascular</i> <input checked="" type="checkbox"/> chest pain/ discomfort <input checked="" type="checkbox"/> leg pain with exercise <input type="checkbox"/> palpitations <i>Chest (breast)</i> <input type="checkbox"/> lump or discharge	<i>Respiratory</i> <input type="checkbox"/> cough/wheeze <input checked="" type="checkbox"/> difficulty breathing <i>Gastrointestinal (digestive)</i> <input checked="" type="checkbox"/> abdominal pain <input type="checkbox"/> blood in bowl movement <input type="checkbox"/> nausea/vomiting/diarrhea <i>Genitourinary</i> <input type="checkbox"/> nighttime urination <input type="checkbox"/> leaking urine <input type="checkbox"/> unusual vaginal bleeding <input type="checkbox"/> discharge from penis/vagina <i>Musculo-skeletal</i> <input checked="" type="checkbox"/> muscle/joint pain <i>Skin</i> <input type="checkbox"/> rash or mole change	<i>Neurological</i> <input type="checkbox"/> headache <input type="checkbox"/> dizziness/light-headedness <input type="checkbox"/> numbness <input type="checkbox"/> memory loss <input type="checkbox"/> loss of coordination <i>Psychiatric</i> <input type="checkbox"/> anxiety/ stress <input type="checkbox"/> problems with sleep <input type="checkbox"/> depression <i>Blood/Lymphatic (immune)</i> <input type="checkbox"/> unexplained lumps <input type="checkbox"/> easy bruising/ bleeding <input type="checkbox"/> Other: eyes and skin appear different color (yellow tinge)
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Patient Data Table 1: BMI				
BMI (#): _____	<input type="checkbox"/> Healthy	<input type="checkbox"/> Underweight	<input type="checkbox"/> Overweight	<input type="checkbox"/> Obese

Patient Data Table 2: Urine Testing		
Urination Habits	N/A	Indication(s):
Color	Pale yellow	
Odor	Normal	
Transparency	Clear	
Sugar present	No	
Protein present	No	

Patient Data Table 3: Blood Testing		
	RBC # (million cells/mcL):	WBC # (cells/mcL):
	3.2	9,001
	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low	<input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Low

Patient Data Table 4: Lung Capacity Testing		
Circumference (cm)	54	Acceptable Lung Capacity (cc): Find Body Surface Area (BSA) $\sqrt{\frac{\text{Height (cm)} \times \text{Weight (kg)}}{3600}}$ If female: BSA x 2000 If male: BSA x 2500
Radius (cm) $r = C/2\pi$		
Diameter (cm) $d = 2r$		
Lung Capacity *Refer to Reference Table 4		
<input type="checkbox"/> Capacity is normal <input type="checkbox"/> Capacity is too high <input type="checkbox"/> Capacity is too low		

Patient Data Table 5: Glucose Tolerance			
<h3>Glucose Tolerance Test Results</h3> 			
Glucose Level (mg/dL) after two hours:	<input type="checkbox"/> Above 200	<input type="checkbox"/> Between 145-200	<input type="checkbox"/> Below 145
Insulin Levels must be:	<input type="checkbox"/> Low	<input type="checkbox"/> Borderline	<input type="checkbox"/> Normal

Patient Diagnosis Page: Use evidence to diagnose each patient and describe treatment.

Jane Smith	John Thomas	Robert Smith
Diagnosis:	Diagnosis:	Diagnosis:
Evidence:	Evidence:	Evidence:
Treatment:	Treatment:	Treatment:

