

Dover High School
Anatomy and Physiology Summer 2017

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Reading Guide to *The Deadly Dinner Party*

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Part I – Human Meets Pathogen

1. The Deadly Dinner Party

Pam Strogess and five other guests went to the dinner party on Sunday night. The meal included:

_____.

Pam knew something was wrong because ...

Steve Gleason, the host, was home sick with symptoms that included:

What allowed Dr. Pickard to conclude that the diner guest had botulism?

Botulism, from the Latin word *botulus*, means _____; dating back an outbreak of the disease ...

Describe the biological characteristics of the bacterium *Clostridium botulinum*.

Explain how the botulism toxin affects the human body.

What is the Achilles heel of the botulism toxin; be specific?

Sketch a concept map of the different types of *C. botulinum*; be sure to include not only how they are named but what they specifically target for hosts.

Explain what Botox is and how it works as a cosmetic treatment for aging skin conditions like wrinkles.

What is the antitoxin for botulism and why is it so essential that the diagnosis for botulism be precise?

The source of botulism in this case was the _____.

Like many medical situations, everything has to fall in place to go right or go wrong. So why was the Colavita garlic in oil a perfect source of botulism?

2. Everywhere That Mary Went

Ron Harvey and Rita Osborn decided to have their honeymoon in ...

Roy's symptoms included:

Dr. Mitchell Brodey was not only a primary care physician but specialized in

The combination of the _____ and the _____
_____, along with the _____ of the case, will usually point the
doctor in one of two directions: _____

_____ or _____

What are the two reasons Dr. Brodey admitted Harvey to the hospital?

1)

2)

Dr. Brodey's professional curiosity was piqued when...

The big question Brodey asked himself was “

Roy Harvey's blood tested positive for _____ the causative agent of _____

What distinguishes *S. typhi* from other species of *Salmonella*?

S. typhi is a _____ shaped bacterium.

Symptoms of typhoid fever include:

Despite modern medical care typhoid mortality is _____.

Control of typhoid fever was not so much a triumph of antibiotics but of

Why and how did Dr. Reed change the occurrence of typhoid fever?

Why do doctors refer to the spread of typhoid fever as a "fecal-oral route"?

Every typhoid epidemic can be traced to a _____

What is meant by an "asymptomatic carrier"?

Summarize the lesson learned from the Aberdeen, Scotland outbreak.

Dr. Brodey reinterviewed the two men and concluded...

What were the first steps taken by the epidemiologists?

What did the epidemiologists quickly concluded about everyone who had developed typhoid?

In order for the epidemiologists to accomplish their goal of finding the source and preventing more cases they had to do what two important steps?

The great physician and microbiologists Robert Koch hypothesized what about typhoid?

Because of Dr. Koch's and other's work, restaurant employees must wash their hands after going to the bathroom because...

Summarize the Mary Mallon story (everywhere that Mary went)

In the end, public health officials determined the cause of this typhoid breakout in upper New York state was due to ...

3. The Baby and the Bathwater

Dr. Ramsey diagnosed 14 month old Katie Wolz with simple _____.

Fill in the below chart on how bacteria and other microorganisms enter the human body.

Entry route	Example(s) of diseases/conditions
Mucous membranes of the eyes, throat or genital tract	Conjunctivitis, strep tonsillitis, syphilis

List the causes of gastroenteritis:

Explain why death from dehydration has been successfully reduced.

The causal agent turned out to be _____ an extremely rare bacterium.

4. Rubbed the Wrong Way

What is the cornerstone of diagnosing a patient with a rash?

Sequence the steps a physician takes in diagnosing a rash

- 1) demographic facts:
- 2)
- 3)
- 4)
- 5)
- 6)
- 7)

Besides patient history the _____ is also important.

Dermatologists describe the morphology of rashes by asking what questions?

Why is morphology of a rash considered limited?

Fill in the correct dermatology terms in the table below.

Term	Description
	Flat spot
	Raised spot
	Papule with pus

	Papule with clear fluid
--	-------------------------

How is distribution of a rash broken down?

Viral infections of the skin are shown as _____; examples of diseases include:

Limone's rash was diagnosed by a positive test for the bacterium called _____.

In Dr. Gordon's notes he states "bilateral axillary lymphadenopathy". What does that mean?

What are the two pigments that PA produces?

PA is referred to as an opportunist bacterium; which means ...

Folliculitis is ...

The *American Medical Association* published a paper documenting that generalized pustular rashes were found on people who were using ...

What are the three variables that investigators determined as common denominators in PA infected hot tubs, whirlpools and swimming pools?

- 1)
- 2)
- 3)

Keratitis is ...

PA only infects _____ - _____ skin.

The authors of the Tennessee study concluded that “prevention of pseudomonas folliculitis should be possible by maintenance of pool water at a pH of _____ and free chlorine levels of _____.

Why is it more difficult to maintain adequate pH and chlorine levels in heated whirlpools and baths?

Dr. Bottone, knowing PA affinity for water, focused on Limone’s ...

Bottone, after testing all of Limone’s toiletries, determined that PA was in Limone’s _____ ?

All sponges, natural or synthetic collect bacteria if left _____ and _____.

How did Dr. Bottone conclude that PA strain in the sponge was the same as the one he cultured from Limone’s skin lesions?

Summarize the ways sponges can be treated to reduce the probability of growing bacteria.

5. The Forbidden Fruit

Michelle and Emily (the almost 4 year old) both had a severe case of _____?
Most cases are self-limited and the usual treatment is merely to ...

Bloody diarrhea generally means ...

The heart pumps roughly _____ of the body’s blood flow through the kidneys, which filter the blood to remove _____. The wastes are then excreted in the _____.

Two substances the kidneys remove from the blood are _____ and _____.

BUN stands for _____.

Normal level of BUN is _____; normal level of creatinine is _____.

When BUN and creatinine exceed these numbers, the condition is known as _____ or _____.

Reasons for kidney failure:

1) Pre-Renal meaning ...

This usually means that not enough _____ is getting to the kidneys, sometimes from _____ or _____.

As blood pressure falls (reducing pressure), kidneys begin to _____ and BUN and creatinine start to _____.

2) Post-Renal failure is caused ...

A common cause is ...

3) Kidney (organ) failure is when the ...

Glomerulonephritis is an ...

The treatment of a patient with renal failure will depend entirely on ...

An 'artificial kidney' is known as a _____.

Dr. Rok saw Emily's BUN was 35 and her creatinine was 2.6. The two other clues were:

1)

2)

Dr. Rok conclude that Emily had _____.

The medical term for kidney failure is _____; the condition that causes shredded cells is _____.

Most cases are associated with eating food that has been contaminated with

A serotype is a variation in a bacteria's _____. Body proteins are designated as _____

And flagella proteins are designated as _____.

The bacteria that was identified as the cause of this bloody diarrhea was designated _____

One mark of a great doctor is the ability to know ...

The epidemiologist launched a three-pronged investigation that included:

1)

2)

3)

The investigators finally landed on _____ _____ as the prime suspect harboring the E. coli O157:H7.

Why was apple cider a surprise to the investigators?

After determining that apple cider was the source, the next thing the investigators needed to determine was?

Why are apple drops unsafe as a food source or as a source of cider?

Why have lettuce and spinach been contaminated with E. coli?

What are the fundamental steps in food hygiene?

Part II – The External Environment

6. Two Ticks from Jersey

Little Annie’s mother rushed her to the hospital when she noticed...

Not only was Annie weak, she couldn’t speak properly, had double vision but was ataxic meaning...

Her eyes could not move in _____.

Unlike chameleons, whose two eyes can move _____, humans are endowed with eyes that track objects only as a _____.

Sketch an eye and the brain and make a ‘wiring diagram’ based on the information on page 76. Label the cranial nerves (III, IV, and VI).

Double vision – or _____ is a very serious medical condition. Potential problems include: _____, _____ and _____.

All of Annie’s blood and urine tests came back normal so the physician ordered brain scans including...

The radiologist thought there was diminished blood flow to the back of the brain; translation _____; an odd problem for a five year old.

Stroke is ...

Dr. Henretig’s evaluation showed what abnormal neurological abnormalities?

Describe Guillain-Barre syndrome.

Dr. Henretig wanted to perform a spinal tap or _____ to extract _____ which acts as a _____ and _____ for the brain and spinal cord.

The major clue to the diagnosis of Guillain-Barre syndrome is the dual findings of...

At this point Annie was areflexic meaning....

The doctors tested her lung function by measuring ...

Describe the procedure and reason for plasmapheresis.

What does Annie's mother find?

Why was Lyme disease an incorrect diagnosis for Annie?

Other than bacteria or viruses, *Dermacentor* can cause _____
_____ CAUSED BY _____.

Once diagnosed, tick paralysis treatment is simple –just ...

The ‘two ticks from jersey’ are _____ and _____

7. An Airtight Case

Philip Bradford underwent numerous tests including a bronchoscopy – a test so physicians can determine...

Tomograms which are ..

The doctors concluded that Bradford had ...

Why did the doctors prescribe a thoracotomy?

What two reasons did Dr. Wilkins cite as to why he didn’t believe Bradford had cancer?

What allowed Dr. Rubin to conclude that something in the environment was the cause of Bradford’s ailment?

Pneumonia is simply an ...

What is the difference between infectious pneumonia and hypersensitivity pneumonia?

Describe farmer’s lung.

Describe thermophilic actinomycetes.

What is the purpose of these thermophilic actinomycetes (actually bacteria – two words:

Pasteur’s experiments showed for the first time ...

What clue finally emerged during Dr. Rubin’s questioning?

HAVAC stands for ?

What two events allowed Dr. Rubin to clinch the diagnosis?

The Massachusetts Environmental Protection Agency estimates that ____% of all illnesses are some form of _____; at an estimated annual cost to society of ...

8. Monday Morning Fever

What evidence allowed doctors to conclude that Melville did not have a heart attack?

What did George Melville find out at the water cooler at work?

Melville worked for _____ in

_____.

What is flock?

Voltaire wrote, “Work keeps us from ...

What two federal agencies were created in 1970?

Polymer means ...

PTFE, developed by Plunkett and Dupont goes by the trade name _____.

Professor Peters found from his investigations that people who developed polymer-fume fever were _____.

What two steps were initiated to halt the outbreaks?

Describe interstitial lung disease.

An abstract is usually a ...

Kern and his colleagues coined a new term - _____.

9. The Case of the Wide-Eyed Boy

What is a triage nurse?

What symptom did the triage nurse note about Shawn Matthews?

Shawn had no problem ...

What distinguishes emergency medicine from many other specialties?

The _____ of the eye is the dark central area that is surrounded by the colored part, the _____.

Why is the iris the business portion of the eye?

What is the name of the nervous system that controls the sphincter muscles of the eye below chart

Autonomic Nervous System	
Sympathetic Division	Parasympathetic Division
Does...	Does..
Nerve fibers from	Nerve fibers from

What is the function of the posterior communicating artery?

What is meant by a consensual reaction?

An accommodation reflex occurs when...

Describe an aneurysm and how they are diagnosed?

Describe how doctors in the 1980's treated a subarachnoid hemorrhage.

Nowadays aneurysms are treated by _____ which involves...

If an aneurysm occurs in the posterior communicating artery it presses on _____ causing the pupil to dilate.

Setnick recalled treating a Harvard grad student with similar symptoms, pupil dilation, caused by the chemical _____.

The origin of this chemical is the plant _____ (scientific name) commonly called _____.

More than a poison, Renaissance women used a dilute drop of the plant's juice to ...

The name Belladonna comes from ...

Medical uses for belladonna included treating:

Symptoms of atropine poisoning result from an imbalance in the ...

Doctors used the mnemonic "hot as a hare, blind as a bat, dry as a bone, red as a beet, and mad as a hatter" for the symptoms of atropine poisoning. Transcribe each part of the mnemonic into patient symptoms in the below table.

Mnemonic	Transcription
Hot as a hare	
Blind as a bat	
Dry as a bone	
Red as a beet	
Mad as a hatter	

On the medical side, atropine has been used in what two medical situations?

"In medicine, we feel...

Setnik seriously thought about sending Shawn to Boston Children's Hospital for an _____ but started over by asking Mrs. Matthews questions about?

The cause of Shawn's headaches were due to?

Part III – The Internal Milieu

10. A Study in Scarlet

What is the setting of this case?

Why did the early inhabitants of New Hampshire not mention the changes in leaf color in autumn?

Define "leaf peepers".

What were Dr. Guyer's symptoms?

Describe the components of an allergic reaction.

What effects does histamine cause in allergic reactions?

Why did the doctor's at who were getting sick call in the hotel's physician?

Dr. Mary Wilson, an infectious disease specialist was pretty sure Guyer was suffering from?

Describe scombroid poisoning.

How much fish per year is caught and consumed?

Those figures do not count the ...

Seafood poisoning accounts for _____percent of all reported food-borne illnesses.

Scombroid outbreaks most often come from _____ and _____.

Symptoms of scombroid poisoning include:

IF correctly identified, the cure for scombroid poisoning is?

What 3 conditions are necessary for scombroid poisoning to occur?

1.

2.

3.

To prove the diagnosis of scombroid poisoning, the fish flesh must test positive for what three chemicals?

Seiferth, the sanitarian for the NH department of public health, stated “The fact that the fish was still frozen was crucial for two reasons.” What were the two reasons?

Short of divine intervention, once a fish has spoiled...

The cause of scombroid poisoning is due to improper handling of the fish after being caught. Why is the temperature of the fish once caught so important?

Histidine to histamine occurs because of ..

Gutting the fish after catching it helps reduce the chance of scombroid poisoning because...

Scombroid poisoning is not often fatal, but the two reasons to go through the diagnosis are:

1.

2.

11. The Case of the Overly Hot Honeymoon

Linda Corsetti was a student at ...

Her blood tested positive for a low white blood cell count with an abnormally high ...

The two most common causes of a low count are ...

Blood cells are manufactured in the _____ .

When elevated numbers of lymphocytes are found, what diseases are under suspect?

Corsetti's brother John was a student at Harvard Medical School studying _____ .

The thyroid is a ductless gland that manufactures _____, which is secreted directly into the bloodstream.

Thyroxine controls the body's _____ .

The normal range of thyroxine is ____ - _____ micrograms per 100 cc of blood.

The narrow range is maintained by intricate feedback loops controlled by the ...

Too much thyroxine results in a condition known as?

What did Graves say about educating physicians?

Goiter is a general term used to ...

Endemic goiter is due to a lack of _____.

Graves disease is an _____ problem in which the thyroid is whipped into a frenzy by _____.

Corsetti was started on a drug call _____(PTU) which _____ the thyroids ability to produce its hormone.

Why was it that Linda Corsetti could swim in that 45 degree (F) water when nobody else would even go in?

Although Linda's symptoms cleared up when on PTU, what changes occurred in her physiology?

What are the two possible treatments for Graves disease?

What are the three possible maladies that a surgery to remove the thyroid, called thyroidectomy, can have?

Why is it not advisable to administer PTU to a pregnant woman?

The thyroid is considered a very vascular gland meaning it is...

What is tetany and why did some patients develop this condition after thyroid surgery?

What is the recommendation for patients needing thyroid surgery today?

12. Feeling His Oats

Dr. Tracey examined Henry Schachte who he operated on for _____ eighth years earlier.

Schachte had an obstruction in his _____.

After the stomach comes the _____ and then the _____ (colon) and then the anus.

The first part of the small intestine called the _____ has the task of ...

The three portions of the small intestine are the _____, which empties into the _____ which in turn becomes the _____.

The ileum empties into the _____ or colon at the point where the _____ lies.

The small intestine gets its name from...

Most nutrients are absorbed in the _____, its content is mostly _____ from start to finish.

The large intestines job is to absorb _____, making the waste product, stool, a solid consistency.

Bowel obstructions cause the intestine to swell because...

The abdominal cavity or _____ cavity when infected is called _____.

What are the two most common causes of bowel obstructions?

A hernia causes ..

An adhesion is ...

Most adhesions are a result of ...

Pg. 160 Bezoars are ...

Pg. 163 Bezoars (in humans) are ...

Why might toothless people have a higher incidence of bezoars?

Pharmabezoars are ...

What is the connection between cholesterol, fiber, and bezoars?

What did Burkitt, who studied bowel movements, find about fecal output?

What were the benefits found from a high fiber diet?

According to the American Dietetic Association, “dietary fiber is...

The two types of fiber are _____ and _____.

What is the difference between these two types of fiber?

The book *The Eight Week Cholesterol Cure* by Robert Kowalski convinced Henry Schachte to ingest large volumes of _____.

Why does fiber produce gas in the colon?

Why is it important to increase water intake as soluble fiber intake is increased?

Schachte's intestine disorder was diagnosed by the pathologist Tracey as a ...

13. The Case of the Unhealthy Health Food

Joanne Young, the fit and health conscious forty-eight year old was told she had a disorder called _____.

In modern language, ascites is ..

The peritoneal cavity is ...

One of the most common and important causes of ascites is _____ disease.

The liver is located in the ...

Basically the liver takes in _____ and makes finished products that are _____.

What are the two independent sources of blood to the liver?

Everywhere in the body; the veins carry blood away from a _____ and back to the _____.

Backed up plumbing called portal _____ can cause ascites.

Describe the procedure called paracentesis.

A laparoscopy involves...

Hundreds of plants like *Heliotropium* contain substances called _____ which cause inflammation of the small hepatic veins.

In the end, after all Linda went through, the cause of her ascites was due to the intake of two herbal teas called _____ and _____.

Herbal remedies are a _____ industry in the U.S. alone.

14. Little Luisa's Blinding Headache

The two "primary" headache disorders are?

What are the three groups that physicians place patients in after a thorough history and physical exam?

Pg. 187 Doctors, especially neurologist, look at the retina of the eye with an _____.

What happens at the retina?

Why is the retina a window to the brain?

The central portion of the retina is called the _____.

The papilla is the ...

Papilledema is ...

What do the veins of the retina do and when they don't do that it may be an indication of what condition?

Why is an MRI of the brain a superior imaging technique than a CT scan?

What is the scientific basis of an MRI (pg. 189)?

The doctors decided to do a spinal tap to remove some _____ from the _____ space.

What are the two functions of cerebrospinal fluid?

Why is the pressure of the fluid also measured?

Luisa's pressure was _____ the norm; the diagnosis was determined to be ..

Doctor's finally determined that Luisa's condition was due to toxicity from too much ?

15. Too Much of a Good Thing

Goldberg found that she had a condition called _____; too much _____ in the blood serum.

Other than water, the five most common elements in the human body are:

Bernard, the father of physiology, not only was one of the first scientists to use the scientific method in a vigorous way, he defined the physiological concept of _____.

Summarize why the concept of homeostasis is explained in relation to hypercalcemia.

What problems and symptoms appear from hypercalcemia?

Pg. 201 The most common cause of high blood calcium is..

Based on the links between 18 month old Christa and fifty-eight year old Lou Goldberg and the fact that other cases were being reported, all of which showed patients with no tumors and normal parathyroid function, Dr. Holick concluded that all patients had elevated levels of?

A vitamin is ...

Doctors learned about the importance of vitamins, usually due to...

What is meant by the term endemic when describing the occurrence of Rickets in the 1800's in N.A. and Europe?

Describe Rickets and its cause.

The cure for Rickets was determined to be?

As a result of determining the causes of Rickets, what did dairies in the U.S. do?

What is the connection between calcium (hypercalcemia) and vitamin D?

In the end, hypercalcemia was due to...