Supplemental Materials
for
“General Hospital”: Using Skit-Writing and Role-playing to Teach Pathogenesis
Adrienne A. Dolberry
Biology Department, Salem State University, Salem, MA, 01970

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**Grading of ‘General Hospital’ Pathogenesis Project**

**A. Submission and Review of First Draft with Instructor**

1. First Draft Submitted by Deadline
   
   **5 points earned**

   **and**

2. Points for Evaluation

   a. Draft is typed and stapled. Well-structured story makes a strong attempt to address all guidelines stated in the instructions.
   
   **5 points earned**

   b. Draft is typed and stapled. Missing one point stated in the guidelines.
   
   **3-4 points earned**

   c. Draft is typed and stapled. Missing two points stated in the guidelines
   
   **1-2 points earned**

   d. Draft not typed and/or stapled. Draft is missing three or more points stated in the guideline OR not typed when presented to the instructor
   
   **0-1 points earned**

**B. Submission and Review of Second Draft with Instructor**

1. Second Draft Submitted by Deadline
   
   **10 points earned**

   **and**

2. Points for Evaluation

   a. Draft is typed and stapled. Well-structured story makes a strong attempt to address all guidelines stated in the instructions. Significant revisions made to improve draft.
   
   **15 points earned**

   b. Draft is typed and stapled. Missing one point stated in the guidelines but significant revisions from first draft made to improve quality of assignment
   
   **9-12 points earned**

   c. Draft is typed and stapled. Missing two points stated in the guidelines but significant revisions from first draft made to improve quality of assignment
   
   **3-6 points earned**

   d. Draft is NOT typed and/or stapled. Missing three or more points stated in the guidelines. No significant attempt by group to revise draft.
   
   **0-2 points earned**
C. Final Draft

35 points total

1. Final Submitted by Deadline

and

2. Points for Evaluation

   a. Final Assignment is typed and stapled. Well-structured story. All guidelines stated in the instructions are addressed. No or minor errors in information presented. Sources are cited and approved by instructor.  
      25 points earned

   b. Final Assignment is typed and stapled. Well-structured story. One point from guidelines stated in the instructions is missing. Minor errors in information presented. Sources are cited and approved by instructor.  
      15 – 20 points earned

   c. Final Assignment is typed and stapled. Well-structured story. Two points from guidelines stated in the instructions is missing. Minor errors in information presented. Not all sources are cited OR some not approved by instructor.  
      5-10 points earned

   d. Final Assignment is not typed and/or stapled. Inconsistencies in story. Three or more points from guidelines stated in the instructions are missing. Significant errors in information presented. No sources cited.  
      0-4 points earned

Presentation of Writing Assignment to Class

25 points total

1. Group provides presentation of writing assignment. All members contributed equally to presenting information and answering questions. All information CLEARY addressed guidelines. Group presented information in lay terms – understandable for the audience. Creative use of props and images in skit. No difficulty answering questions.  
   25 points earned

or

2. Group had slight difficulty presenting information accurately. Use of complex terms without explanation of their meaning. Group members are uneven in their contribution to the presentation. Use of props or images to support skit. Some difficulty answering questions.  
   11-19 points earned

or

3. Group presented minimal information on writing assignment and/or had major difficulty answering questions related to assignment. Skit hard to follow – no structure. Complex terms neither explained nor re-worded to lay terms. No props or images used. Major difficulty answering questions  
   5-10 points earned
Background:

Two sisters (Savanah and Brittany) went to the doctor’s office complaining of a runny nose, fever, and slight cough which has become more severe over the past week. Two weeks ago Savanah returned from a trip to California for spring break and felt run down with flu like symptoms. The two live together and Brittany soon after presented with the same, but slightly milder symptoms. The doctor visit presents as follows:

Set of scene: Both sisters are sitting in Doctors office waiting for doctor. Doctor enters room.

Doctor: Good morning girls, what brings you in to see me today?

Savanah: I just recently returned from a Spring break trip to California visiting a friend who goes to college there, but is originally from Fresno. The last night we were there we visited her family and went to a block party where there were tons of people. A few days later I began to feel under the weather and run down.

Doctor: Can you describe the exact symptoms that you have been feeling?

Savanah: I first started to have flu like symptoms with a runny nose, slight cough, and a fever that has stayed above 101 °F. After a week or so my cough became worse and I felt like I couldn’t catch my breath after a coughing fit, and sometimes I would even throw up from coughing so hard.

Doctor: Were you in contact with sick people during your vacation in California

Savanah: Ya a few of my friends with me were feeling a little sick and seemed run down after midterms.

Doctor: Did they have a cough also?

Savanah: Come to think of it my cough sounds a lot like theirs did.

Doctor turns to other sister

Doctor: Ok so what brings you in with your sister?

Brittany: I have been having the same symptoms as my sister did in the first few days that she became sick. She and I live together and spend all of our time together. I must have picked up what she got.

Doctor: Ok so I’m going to listen to both of your lungs and take your vital signs.
Doctor then listens to both sister’s lungs and take vital signs (temperature, pulse, respiration, and blood pressure)

Brittany: So what do you think Doctor?

Savannah coughing

Doctor: Based on your symptoms of runny nose, fatigue, fever of 101.8°F, and some fluid that I hear in your lungs I might be apt to say that the two of you have the flu or pneumonia. But because Savannah just got back from a trip to California and visited the Fresno County which has had the highest number of reported incidents of Pertussis, and the sound of your cough I believe that she might have been exposed to Pertussis also known as Whooping cough.

Savannah: Why do you say that?

Doctor: According Web Md there has been a recent outbreak of Whooping Cough in California that is the worst they have seem in the last 50 years. According to CDC, since the 1980s, there has been an increase in the number of reported cases of pertussis in the U.S., especially among 10-19 year olds and infants younger than 6 months of age. Also the sound of your cough and the gasping breath following your cough is another indicator of Whooping Cough.

Brittany: What is Whooping Cough?

Doctor: Whooping Cough is actually called pertussis and is a very contagious respiratory tract infection that is noticed by a severe hacking cough that is followed by the high pitch sound of the person trying to catch their breath, which can actually sound like a “Whoop”. Protection against pertussis from early childhood vaccines wears off, leaving adults and adolescents at risk for infection. Adults rarely have the classic “whoop”.

Savannah: Oh so that’s why it is so hard to catch my breath after a coughing fit and why it sounds like that!

Doctor: Exactly. The infection is caused by the bacteria Bordetella Pertussis. This particular bacterium actually attaches to the cilia or tiny little hairs in your upper respiratory tract. Once in the tract it releases toxins which in turn cause damage and inflammation to the cilia. This particular bacterium causes flue like signs and symptoms in the beginning such as a runny nose, slight fever, and a slight cough. If untreated the cough will continue to get worse and cause that “whooping” sound that we spoke about earlier.

Brittany: So my sister probably caught Whooping Cough in California, then did she give it to me? Is it very contagious?

Doctor: If the two of you do have the illness then yes I believe that Savannah first contracted it at the block party in California while on her trip and brought it home with her. Given how contagious this bacterium is and the fact that the two of you live together I believe that she is
turn infected you, Brittany. The bacterium is usually spread through coughing or sneezing while in close contact with others.

**Brittany:** Great thanks Savanah! You won’t share your shoes with me but you will share your bacterium with me!

**Savanah:** Sorry but you never return my shoes, the bacterium you can keep though.

**Brittany:** So how do we find out if it really is Whooping Cough that we have?

**Doctor:** Well I am going to perform a nasopharyngeal Swab on both of you. To do this I will lay you both on your backs and use a special extra long swab and go through your nose into the back of your sinus to get a sample. Then we will immediately send the sample to laboratory for them to grow out the bacteria to determine if it is in fact Whooping cough. We will set up an appointment for the two of you to come back in three days for the results and talk about any necessary treatments that you may need.

**Savanah:** Ok sounds good doctor.

**Doctor:** In the mean time let’s talk about preventative measures. I noticed in both of your medical records that neither one of you received the series of vaccines when you were children.

**Brittany:** Ya that’s right, our parents don’t believe in vaccinations. They believe that some can cause things like autism, so we didn’t receive any of those vaccines.

**Doctor:** Ok well I should let you know that the best way to prevent against Whooping cough is to receive a series of five vaccinations called DTaP, which stands for diphtheria, tetanus, and pertussis. Since you are adults you should probably not receive that particular vaccine but you could get the TDaP, which is a variation if you wanted to.

**Savanah:** What’s the difference between DTap and TDaP

**Doctor:** The vaccine, called TDaP, is different from the DTaP vaccine which is given to babies and young children because it contains lesser quantities of diphtheria and pertussis proteins. For this reason, TDaP is much less likely than DTaP to cause side effects such as pain, redness and tenderness in adolescents. The TDaP vaccine is recommended for all adolescents 11 and 12 years of age, healthcare workers, and 19-64-year-olds. But before you decide that let me ask, are either of you going to be near any babies or children any time soon?

**Brittany:** Yes our brother just had a baby girl 3 months ago.

**Doctor:** Ok well it’s important for the both of you stay away from your niece and anyone else who could potentially have contact with the baby until we get your test result in. This is really important because I’m assuming your brother also didn’t receive the vaccine and Whooping Cough can be very dangerous in infants. The signs and symptoms are much more exaggerated...
especially the cough and can even cause death. Adults and adolescents can spread pertussis to infants who have not yet had all of their vaccines, even before a cough develops.

**Savanah:** Oh wow, ok so we will make sure to stay clear of them all!

**Doctor:** Ok so we will do the test now and you will come back in three days ok.

**Brittany:** ok sounds good.

**Doctor performs the test on both sisters.**

**Doctor:** I’ll see you in 3 days. In the meantime, use over the counter medications to treat your symptoms. Robitassin, will calm your cough, tylanol will drop your fever and treat your cold. Take those two medicines as needed. Stay warm, get a lot of rest and stay hydrated.

**Sisters:** Thank you Doctor.

**The girls leave and go home.**

**Three days later. The girls return to the doctor’s offices for their test results, and are sitting in the office and the doctor enters.**

**Doctor:** Hello girls how are you both feeling today?

**Savanah:** Not too good doctor my cough seems to be getting worse and worse.

**Brittany:** Ya, me to I can’t seem to catch my breath after I’m done coughing.

**Doctor:** Well your test results came back and you both tested positive for Pertussis, or Whooping Cough.

**Brittany:** Man you suck Savanah, I can’t believe that you gave me Whooping Cough.

**Savanah:** So what do we do from here?

**Doctor:** I’m going to prescribe you both an antibiotic, and it is very important that you start the regimen immediately and continue it consistently and completely until the prescribed dosage is finished. And since two weeks has passed already we cannot waste another day without treatment.

**Brittany:** Ok what antibiotic are you giving us and how long is the treatment?

**Doctor:** I am prescribing you both Azithromycin which is a broad spectrum antibiotic that you will take for five days. This antibiotic stops the bacteria that causes Whooping Cough from producing the necessary proteins for reproduction and prevents you from spreading the disease to anyone else. If you experience any severe nausea, vomiting, or loss of bladder control come and see me immediately, but you might experience some of these symptoms moderately.
**Savannah:** So when should we expect to feel better and be rid of the cough?

**Doctor:** So you should start to feel better within a few days after starting the antibiotic and you can expect a full recovery in about a week’s time.

**Brittany:** Can we ever get this again after we finish the antibiotics?

**Doctor:** Yes it is always possible that you can contract this disease, but there are ways to prevent it. I strongly suggest that you and your family members receive the TDaP vaccination, and your brother’s newborn should also receive the DTaP vaccination. Because as I have already told you Whooping Cough can be deadly in an infant. In the mean time still keep your distance from your family especially the baby until you have finished the antibiotic.

**Sisters:** Ok thank you for your help and we will make sure to follow your orders!
**General Hospital Project**

**Characters:**

*Sarah:* Patient - 18 year old college freshman living in the dorm at Salem State University

*Rachel:* Sarah’s best friend and roommate in the freshman dorm

*Maria:* Good friend who also lives in the freshman dorm

*Nurse Jackie:* Nurse at the college infirmary

*Dr. Smith:* ER doctor at General Hospital

*Nurse Rihanna:* ER Nurse at General Hospital

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**SCENE 1**

*Campus Infirmary 3pm  **[Infirmary]***

Patient Sarah is not feeling well and comes from dormitory into the campus infirmary to get checked out.

**Nurse Jackie:** Hi there Sarah, my name is Jackie, what seems to be the problem?

**Sarah:** I don’t know, I think I have might have a fever because I have the chills. I’m super tired and my head and neck both really hurt.

**Nurse Jackie:** Well it is about that time of year, flu and cold season you know. Have you been doing a lot of reading?

**Sarah:** Yup, I have a huge test on Friday, and I’m totally not prepared.

**Nurse Jackie:** Do you live on campus?

**Sarah:** Yes, I live in the freshman dorm.

**Nurse Jackie:** Is anyone else sick in you dorm?

**Sarah:** Not that I know of.

**Nurse Jackie:** With all of that reading, that might be why your neck hurts. I’m just going to examine you; I bet you are run down because of studying and the stress of upcoming exams.
The nurse does her assessment of Sarah taking all of her vital signs and recording them and says:

Nurse Jackie: Yes Sarah, you do have a slight fever of 100 degrees, and your blood pressure is 129/95, a little high for your age. Your heart rate is at 90 and your respiratory rate at 19. You probably have a virus. Common signs and symptoms of viruses are fatigue, fever, muscle aches and headache, increased heart rate and BP. I want you to take this acetaminophen (Tylenol) and go back to your dorm. Drink plenty of water and get some rest.

Sarah: Okay, thank you.

Nurse Jackie: If you start feeling worse, go to the hospital and get checked out.

Dorm Room at 5:00pm, Sarah is laying in bed shivering, groggy, and crying.

Rachel: How are you feeling Sarah? **Dorm Room**

Sarah: Oh, I feel worse. My head hurts so bad! I’m so achy and I’m scared.

Rachel: Wow, you don’t look so good. Oh my god, you are burning up! We better get you to the hospital!

SCENE 2 **ER**

General Hospital Emergency Room 6:00pm: Examination Room #1: Sarah’s laying under a blanket when doctor enters.

Nurse: Doctor Smith, Sarah has a fever of 103, her blood pressure is 135/90, respiratory rate is 20 and her pulse is 101.

Doctor: Thank you, by the sounds of it, something is going on here.

Doctor takes chart from nurse and introduces himself.

Doctor: Hello Sarah my name is Doctor Smith. I see you’re here because you’re not feeling so great. Can you tell me how long you’ve been feeling this way?

Sarah: Yes, around noon today, I started feeling lousy. My mom told me to go to the doctor so I went to the college infirmary and they said to come here if I wasn’t
feeling better. I’m feeling much worse now even though they gave me some Tylenol at 3:00.

**Doctor:** Are there any other symptoms you’re having?

**Sarah:** Well my body is feeling stiffer and it really hurts when I move my neck like this *Sarah moves her head down to her chest* OUCH! I think I have a rash, see. *She shows her arm to the doctor* My head is pounding and the light really hurts my eyes.

*Doctor looks at Sarah’s chart*

**Doctor:** Sarah, have you had your meningococcal vaccine or booster? I’m looking up your record and I don’t see it. This is a vaccine required by Salem State if you are going to be living in the dorm.

**Sarah:** Yes, I got the vaccine when I was 12 years old, but I didn’t get a booster shot. When I went for my physical before school started, my doctor did not offer it. I didn’t know I needed another one.

**Doctor:** Well, just last month the CDC has strongly recommended college students get a meningococcal booster shot before going off to college, especially the students are going to be living in the dorms. The CDC panel says that the original vaccine starts ‘wearing off’ after 5 years so getting the booster can protect young people from this potentially serious illness.

**Sarah:** I didn’t know the booster was so important.

**Doctor:** Well Sarah, what my concern is that you may have contracted meningitis. Meningitis is inflammation of the protective covering of the brain and spinal cord. This might be what is causing your headache and stiff neck. I’m going to have you sent for a CT Scan to check for inflammation around the brain, a chest X-ray to rule out pneumonia and if it’s needed, a lumbar puncture. We need to contact your family and we also need to get in touch with the people you live with in the dorm and those you hang out with to get them on antibiotics if necessary. But let’s not waste time; I’m going to send you for the chest X-ray and CT Scan. *Sarah is left speechless. *

**Scene 3** **clean Xray of lungs, CT Scan of meninges with BM**

*Doctor and Nurse are looking at Lab Results in Lab Room.*
ER Nurse: Doctor, Here is Sarah’s chest x-ray and CT Scan results.

Doctor: Her chest x-ray shows that her lungs are clear so pneumonia is out. I see some inflammation in her meninges, which is a strong indicator of meningitis but what type….. we need to find out. The most common and serious form of meningitis is bacterial. It can cause acute onset of illness and result in brain damage or even death if not treated quickly.

ER Nurse: There other kinds of meningitis, but we can probably rule out fungal meningitis because it most often affects those who are immunocompromised like AIDS patients. If it’s viral meningitis, it is relatively mild and usually clears up on its own in a week or two. The only way to find out what kind of meningitis it is is to do a lumbar puncture.

Doctor: We need to start her on IV antibiotics immediately, because if it is the virulent bacterial form, we need to eradicate it before it can do permanent damage to her nervous system. Then get the lumbar puncture stat so we can see what has taken host in her cerebral spinal fluid.

**Lumbar Puncture**
*Afterwards, the nurse called patient’s parents and they are on their way to the hospital. The patient just had lumbar puncture performed and a full CBC work up. Nurse comes into doctor’s office with the results.

ER Nurse: Dr. Smith, here are the results from the lumbar puncture and Sarah’s blood work.

**Lumbar results**

Doctor: Let’s see what her body is telling us. I see that the patient has low glucose levels and high amount of protein in her cerebral spinal fluid. I also see an extremely high white blood cell count, which indicates infection.

ER Nurse: The lab tests confirm that it is bacterial meningitis. The bacteria that is responsible for this is *Neisseria meningitidis*. It is also referred to as meningococcal meningitides.

*Doctor looking over paperwork*  **picture of bacteria**
**Doctor:** Yes, This is a gram-negative bacterium which means it is resistant to many common antibiotics. When this bacterium gets into the blood stream, it can travel to the protective fluid around the brain and spinal cord and can be very dangerous if not treated quickly. The bacterium is enclosed in a strong capsule and attaches to the host cells very tightly which makes it resistant to the body’s natural immunity. So it’s important to use the right antibiotic.

**ER Nurse:** She’s lucky, thank goodness she came in when she first started showing serious symptoms. If these symptoms were not treated, Sarah’s fever would have gotten dangerously high and the bacterial infection would have been impossible to reverse. The consequences could have been fatal.

**Doctor:** Yes, getting her started on ceftriaxone (sef-tri-ax’one) immediately was important. This medication is effective against this dangerous organism and crosses over to the cerebral spinal fluid which is necessary when treating meningitis. It binds to the proteins located on the bacterial cell wall which breaks down the cell wall and kills the bacteria.

**ER Nurse:** We will keep you posted on Sarah’s condition and if her condition changes, we will call you. I know that there are some side effects to this antibiotic, so we will monitor her for stomach cramping or a skin rash. It is critical that we monitor her around the clock, take her vitals every hour until she is out of danger.

**ER Nurse:** This could have easily been confused with a flu or pneumonia. At least we know what we are dealing with. I will make sure that we get all those who have been in close contact with Sarah started on oral antibiotics as soon as possible.

**Doctor:** Good work, Nurse. How is the patient now?

**ER Nurse:** She is still experiencing severe neck pain, but her condition is stabilizing.

**Doctor:** This disease can really take a toll on the central nervous system because the brain and spinal cord are very delicate areas and any kind of pressure in those areas can do quite a bit of damage.

**ER Nurse:** This had to have happened within the last 2 or 3 days. I will notify her school as well.
**Study Group**

**Doctor:** Yes, notify her school, close friends, roommates and others who have had close exposure to Sarah. They need to begin a regime of rifampin within 24 hours. This drug can be taken orally for two days and it suppress replication of the *Neisseria meningitidis*.

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**Scene 4**

*Doctor talks to patient after seeing patients Mother privately.* **Hospital room**

**Doctor:** Hello Sarah, How are feeling?

**Sarah:** Miserable?

**Doctor:** Well your lab results came in and you do have meningitis caused by a bacterium called *Neisseria meningitides*. You are on an IV antibiotic for 7-10 days. It’s a good thing you came in when you did. This medication will attack this bacterium and get rid of it. The bacteria is in your cerebral spinal fluid which is around your brain and your spinal cord. Your body is trying to eliminate this bacteria from your system and in doing so has caused inflammation in this very delicate part of your body called the meninges. Inflammation to the meninges causes sever headaches, stiff neck and would lead to brain damage by the pressure of the swelling. Fortunately we started treatment quick enough that you should not have any permanent complications. You will remain here until you are feeling better. Your school has been notified and your parents are on their way.

**Sarah:** How did I get this? And is it contagious?

**Doctor:** It can be acquired through coughing, kissing, and sneezing or other close contact. 5-15% of the population carry this bacterium but are asymptomatic. You probably inhaled it, and then it got into your blood stream and then traveled to the fluid around your brain and spinal cord. Once it crosses the blood brain barrier, it can become very dangerous.

**Sarah:** But I want to go home and also finish up my finals and this semester. How long will recovery take?
**Doctor**: We will know better about your condition in the next 24 to 48 hours. Bacterial meningitis is very dangerous. Recovery is variable depending on if any permanent damage was done.

**Sarah**: Will I make it?

**Doctor**: Yes, after your fever subsides and you start feeling better, you can be out of here sooner than later but for now let’s get you healthy. You need to avoid excess physical and emotional stress, stay well hydrated and just lay low.

**Sarah**: Is there any way I can get a burger here ‘cause this food isn’t looking right on my plate…..what is this?

**Doctor**: No you may not have a burger and what is in front of you is called Chef’s Surprise!!! Eat it it’s sooo yummy.

**Sarah**: Negative

**Doctor**: Your parents will be here soon

**Sarah**: kk bye

**Scene 5**

_3 weeks later, Sarah is back at school talking to some of her dorm mates, Rachel and Maria._

**Maria**: Wow, you were really sick Sarah, what did you have?

**Sarah**: Bacterial Meningitis, which is the worst kind. Boy did I feel lousy.

**Maria**: Wait, I think I just read something on Fox News.com about a student at University of Wisconsin who died from bacterial meningitis in January 2010. Oh my god that is so scary! No body else at the university got sick, so it was not like an epidemic or anything.

**Sarah**: Yea, it is pretty serious if you don’t get to the hospital fast, I was lucky that I had my BFF Rachel to rush me to the ER.

**Maria**: I got the vaccine when I was 12.
Sarah: Yes, most kids are getting the vaccine at 11 or 12 years old. Now, according to an article that came out last month, October 2010, the experts are saying that the vaccine only lasts about 5 years and then young people need to get another shot or a ‘booster’ shot before going off to college. This helps to keep their immunity up against meningitis especially since college freshmen are living in such close quarters in college dorms. Freshman are much more likely to get meningitis than other kids their age that are not in college.

Maria: Gosh, how do you think you get it, say if you haven’t had the vaccine?

Sarah: The doctor said that the bacteria is spread by kissing, sharing food, utensils, or cigarettes, and even simply by being in close contact with others. It is transmitted through the mucous membranes of the nose and mouth. It does not cause meningitis in everyone, but that how all meningitis cases are spread.

Maria: Well, I’m so glad your okay and I’m glad we are all vaccinated against it!

Sarah: Yeah, now that I’ve seen what bacterial meningitis can do first hand, I’m going spread the word to anyone who is over 11 or 12 to get the vaccine. Then tell them to make sure that they get the booster before heading off to college. I don’t want anyone to go through what I went through if they can help it.

CDC Panel: Teens Need Another Meningitis Shot

October 27, 2010
**CDC panel: Teens need a second bacterial meningitis shot; first doesn't last long enough**

Teens should get a booster dose of the vaccine for bacterial meningitis because a single shot doesn't work as long as expected, a federal advisory panel said Wednesday.

The vaccine was initially aimed at high school and college students because the disease is more dangerous for adolescents and can easily spread in crowded conditions, like dorm rooms. Three years ago, the Advisory Committee on Immunization Practices said the vaccine should be offered to children ages 11 and 12. They believed the shot was effective for at least 10 years.

But the panel was told Wednesday that studies show the vaccine works for less than five years.

The committee debated adding a booster shot or simply push back the timing of the single dose to age 14 or 15. In the end, they voted for a booster dose at age 16, concluding it would be easier and less confusing to add a second dose after five years.

The 6-5 vote for a second shot was an unusually close vote for the panel.

The committee also recommended that people 65 and older who are around infants get vaccinated against whooping cough to help prevent its spread. They were reacting to an outbreak of whooping cough this year in California. Ten infants have died; nine were too young to be fully vaccinated against the contagious disease. Whooping cough vaccine is not currently recommended for the elderly.

The vaccine group provides advice to the Centers for Disease Control and Prevention. The CDC and the U.S. Department of Health and Human Services usually adopt the panel's recommendations and sends the advice to doctors and the public.

However, the meningitis booster shot recommendation may not be adopted quite so easily. A Food and Drug Administration official, Norman Baylor, said more studies about the safety and effectiveness of a second dose of the vaccine are needed.

Some wondered if it was even necessary to make such a decision. Cases of bacterial meningitis are at historic lows, and a survey of more than 200 colleges and universities — representing more than 2 million students — in the last academic year found 11 cases of bacterial meningitis and three deaths.

"I'm not terribly worried about emergent disease," said Dr. James Turner, head of student health at the University of Virginia. He is a liaison to the panel for the American College Health Association.

But during a public comment session, several people made passionate pleas to keep an initial dose at 11 and 12, and add a booster if necessary. A 25-year-old man told of how his legs and hands were amputated after a bacterial meningitis infection when he was 14.

"Why would we want to go backward?" said Nicholas Springer, of New York City.
A CDC expert, Dr. Amanda Cohn, told the panel that some studies have shown the vaccine's effectiveness dropping off significantly within a few years. A small study of one vaccine, Menactra, found the vaccine was about 95 percent effective the first year but dropped to under 60 percent in patients two to five years after they were vaccinated.

The vaccine isn't cheap. One vaccine, Sanofi Pasteur's Menactra, was first licensed in 2005 and costs about $90. Another, Novartis's Menveo, was licensed this year.

The vaccine is designed to prevent bacterial meningitis and an associated bloodstream infection. The infection can cause swelling of the membranes covering the brain and spinal cord.

Though the disease is fairly rare in the United States, those who get it develop symptoms quickly and can die in only a couple of days. Survivors can suffer mental disabilities, hearing loss and paralysis.

The bacteria is spread by coughing, sneezing and kissing, and most cases occur in previously healthy children and young adults.

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