



INNOVATIONS DISCOVERY GUIDE

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Welcome!

Welcome to the National Museum of Health and Medicine! NMHM was founded in 1862 during the Civil War to “study specimens of morbid anatomy.” Photographs, drawings, letters, bones, bullets and surgical tools were all collected to understand and improve the care of service members. Today, we inspire interest in the past, present and future of American military medicine.

This discovery guide will help you “research” the museum’s collections.

This guide will explore:

- Challenges and Triumphs
- Turning Points
- Materials
- Pioneers in Military Medicine
- The Hidden Injury

This guide is designed to inspire interest in American military medicine, and encourage discussions in the classroom and conversations on social media. Use the hashtags to find definitions, images, articles and conversations relating to the topics of military medicine. *There are no right or wrong answers to the questions.*

Warm-Up

What do you know about military medicine?

How has military medicine impacted your life or the life of someone you know?

Challenges and Triumphs

Visit the Military Medicine Gallery

Today's armed forces face unique challenges in keeping service members medically ready both at home and abroad. The military conducts research to develop drugs and #vaccines to prevent and treat diseases. Often, human test subjects participate in certain types of research trials. In order to volunteer as a test subject, the person must sign a consent form or contract that says they understand the risks associated with the research. U.S. Army Major Walter Reed developed one of the first informed human consent forms for the Yellow Fever Commission in 1900.

Locate the consent form and answer the following questions.

What is yellow fever?

How is yellow fever transmitted?

Who wrote this document?

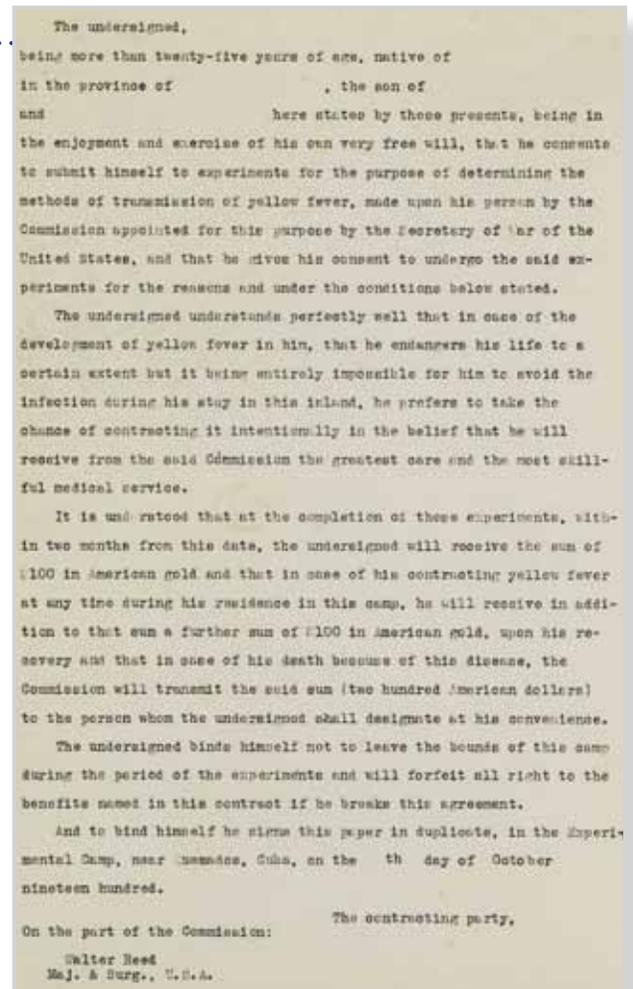
Who was the intended audience for this document?

Why was this document written?

What evidence in the document helps you know why it was written?

Provide a quote from the document.

Write a question to the author that you think the document leaves unanswered.



Did you know?

The World Health Organization (@WHO on Twitter) estimates that nearly 200,000 people are diagnosed with #yellowfever each year.



Turning Points

Turning points are moments in time that impact changes in science, technology or culture. Due to the extreme conditions of #militarymedicine, #innovations and developments occur to improve the state of medicine. Locate the object at right and answer the corresponding questions about its impact on #medicine.



Antibiotics or antimicrobials are drugs that are used to kill microbial infections. Antibiotics such as sulfonamide (sulfa) and penicillin revolutionized medicine by creating an effective means to treat infections such as staphylococcus.

List the four types of microbes.

But I would like to sound one note of warning. Penicillin is to all intents and purposes non-poisonous so there is no need to worry about giving an overdose and poisoning the patient. There may be a danger, though, in under dosage. It is not difficult to make microbes resistant to penicillin in the laboratory by exposing them to concentrations not sufficient to kill them, and the same thing has occasionally happened in the body.

Alexander Fleming, Nobel Lecture, December 11, 1945

Alexander Fleming provided this warning during his Nobel Lecture speech for the discovery of penicillin. Antibiotic or antimicrobial-resistance occurs when the microbes are no longer destroyed by the antibiotic. Resistance is also a natural process in the evolution of bacteria, which requires a need for new antibiotics and diagnostic testing.

Where are most antibiotic-resistant infections found? Why?

How are antibiotic-resistant infections spread?

Why would antibiotic-resistant infections be a concern for military medicine?

Describe an option for reducing the spread of antibiotic-resistant infections.

Did you know?

Penicillin was the first commercialized antibiotic used to treat surgical and wound infections during World War II.

Materials

Bandages, or dressings, are used to stop bleeding and protect the wound from dirt and infection. Bandages are easily transportable and can be applied to a wound at any location. Bandages can be made of anything from lint, cloth, gauze or even silver.

Find the #WorldWarI bandage, First Aid Packet for Shell Wounds.



What material is used in this bandage?

How would this bandage be used?

Who would have used this bandage?

Locate other bandages in the museum. If you were an inventor, what type of materials or methods would you use to make a bandage?

Did you know?

World War I introduced a new, highly-absorbent bandage called Cellucotton (cellulose wadding). This product was developed by the Kimberly-Clark Company and was adapted as the first feminine pad called Kotex (cotton texture) in 1920.



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Can you identify the following people as an Inventor, Pioneer or Patient?

Hint: Look for the colored panels!

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INVENTOR PIONEER PATIENT

1. Dr. Gurdon Buck



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2. Peter Cluckey

3



3. Dr. Gunther Van Hagens



10

4. LTC J.J. Woodward

4



5. Dr. Willem Kolff



11

6. Dr. Peyton Rous

5



7. Dr. Jonathan Chisholm



12

8. Dr. Mary Walker

6



9. President Abraham Lincoln



13

10. MAJ Walter Reed

7



11. COL Emma Vogel



14

12. Dr. Ellis Kerley

8



13. Dr. Jules-Emile Pean



15

14. SFC Eric Smeed

15. PVT Julius Fabry

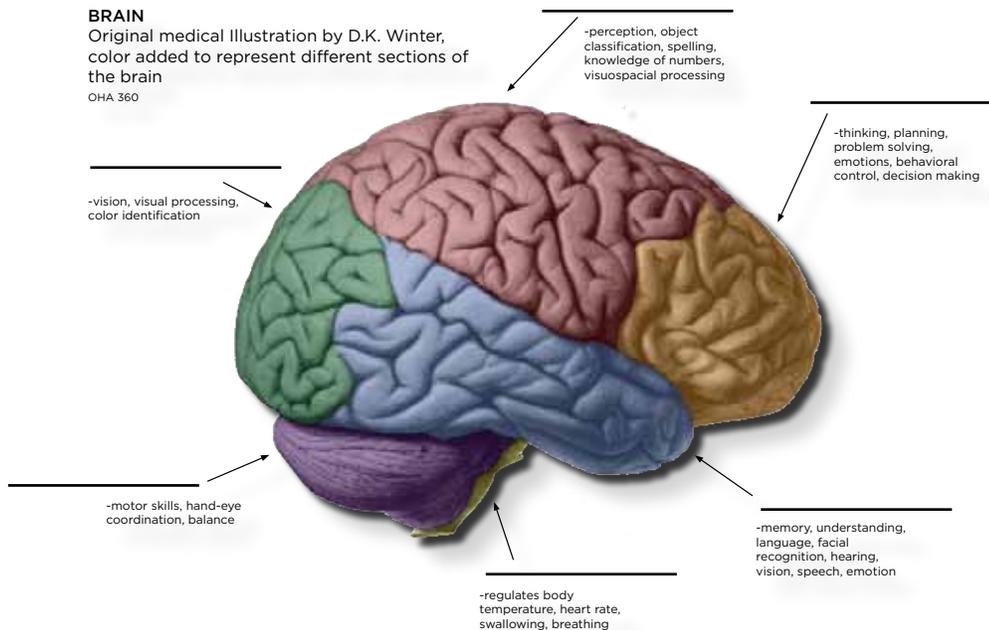
Did you know?

Some cancers can be transmitted by viruses.
This was first discovered in chickens by Dr. Peyton Rous.

The Hidden Injury

Visit the Fragile Organ exhibit in the Anatomy and Pathology Gallery.

Match the anatomical structures of the #brain.



1. Parietal lobe
2. Frontal lobe
3. Temporal lobe
4. Brainstem
5. Occipital lobe
6. Cerebellum

Traumatic Brain Injuries, or TBIs, are caused by a sudden force or blow to the head.

What are examples of a #TBI?

List activities or events that could cause a #TBI.

#Braininjuries can produce a variety of symptoms depending on the location of the injury on the brain. How would the symptoms be different if the hematoma occurred in the frontal lobe versus the temporal lobe? Why are the symptoms different? How would this impact a diagnosis?

#TBIs are often considered to be a “hidden injury.” Why would patients feel that their injuries “can’t be seen?” What impact would this have on their health or treatment?

What types of treatments are used for #TBIs?

Did you know?

Blasts are the leading cause of TBI for active duty military in war zones, but falls are the leading cause of #TBIs for all Americans. Nearly 1.7 million Americans sustain a #TBI each year.

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Continue the Conversation @ MedicalMuseum

#militarymedicine

#innovations

#innovators

#TBI

#braininjury

Now that you have toured the museum and completed the Discovery Sheets, can you describe more examples of how military medicine has impacted your life or the life of someone you know?

List three things you didn't know about military medicine:



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