ANNALS OF FAMILY MEDICINE

Online Supplementary Material

Temte JL, Zinkel AR. The primary care differential diagnosis of inhalational anthrax. *Ann Fam Med*. 2004;2:438-444.

http://www.annfammed.org/cgi/content/full/2/5/438/DC1

Appendix 1. Study Instrument: Letter of Introduction and Clinical Case Histories

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Primary Care Bioterrorism Study Group

Dear Family Physician:

We invite you to participate in a **research study** of alternative diagnoses for diseases of public health importance. Inhalation anthrax is a very rare medical condition with significant patient and public health consequences. In the event of a covert intentional release of anthrax spores, family physicians will be among the first clinicians to encounter cases. We are interested in determining which clinical diagnoses may overlap with, and, thus, be confused with, inhalation anthrax.

This study is being conducted at the University of Wisconsin Department of Family Medicine. **Should you choose to participate, you will be one of up to 665 physicians randomly selected from a national sample of 93,000 American Academy of Family Physician members.** Your participation is entirely voluntary and your responses are confidential. An identification code, used to facilitate repeat mailings if necessary, will be discarded following no more than three distributions of this study packet. There is a slight risk of breach of confidentiality due the design allowing for repeat mailings, but such a breach is not expected. There are no **direct benefits** associated with your involvement with this study. Full participation will take less than five minutes of your time, requiring responses to five key questions regarding each of three brief case vignettes.

You have been provided with three actual clinical case histories, some of which may have originated in patients who were ultimately diagnosed with inhalation anthrax. Please read each case history carefully and provide your most likely **non-anthrax diagnosis**, based on the clinical information. The diagnosis should be written on the attached response postcard. Assume that each case is presenting to you at your primary care clinic and that complete blood counts and chest X-rays can be obtained at your location. Again, we are interested in what you consider the most likely diagnosis, excluding inhalation anthrax.

In addition, please indicate, by circling "**Yes**" or "**No**" on the response postcard, whether you would hospitalize the patient, whether you would obtain a chest x-ray at your clinic, whether you would obtain a blood culture at your clinic, and whether you would initiate (i.e., write a prescription or provide an IM injection) antibiotic therapy at your clinic. Your responses should be based upon your usual pattern of patient care and your non-anthrax diagnosis.

Results from this study will assist in planning for bioterrorism response from a family practice perspective. Should you have questions regarding this study or are interested in additional information please do not hesitate to contact the principal investigator. **For information on the rights of research subjects, you may contact the hospital Patient Relations Representative at (608) 263-8009.** Thank you for your interest and participation.

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Clinical Case Histories

1. Case YB. [Fatal inhalational anthrax]

A 63-year-old, non-smoking male, with a history of hypertension, cardiovascular disease, and gout, presents after awaking with nausea, vomiting and confusion. His illness started five days ago while he was traveling. His initial symptoms were malaise, fatigue, fever, chills, anorexia and sweats. There was no history of headache, cough, chest pain, myalgia, dyspnea, abdominal pain, diarrhea or skin lesions.

On exam the patient is alert and interactive, but speaks nonsensically. He is not oriented to person, place, or time. His temperature is 39.2°C (102.6°F) and pulse is 109/minute; blood pressure and respiratory rate are normal. There is no nuchal rigidity, and examination of lungs, heart, and abdomen are normal.

WBC is 9,400 (76% neutrophils, 15% lymphocytes, 9% monocytes), hematocrit is 45.7%, and platelet count is low at 109,000.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

Would you hospitalize this patient?	**Yes**	**No**
Would you obtain a chest X-ray at clinic?	**Yes**	**No**
Would you obtain a blood culture at clinic?	**Yes**	**No**
Would you initiate antibiotic therapy at clinic?	**Yes**	**No**

6. Case LJ. [Fatal inhalational anthrax]

A 55-year-old, non-smoking, male, with a history of diabetes mellitus and sarcoidosis, presents with complaints of fevers, intermittent diaphoresis and cough productive of green sputum. The illness started two days ago.

On exam the patient has a temperature of 38.9°C (102.0°F) with normal pulse and blood pressure. His respiratory rate is 24/minute. He is in no acute distress. Physical examination is normal.

WBC is 10,300 (87% neutrophils, 6% lymphocytes, 7% monocytes), hematocrit is 43.0% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

8. Case RM. [Fatal inhalational anthrax]

A 47-year-old, non-smoking, male, with a history of asthma and renal calculi, presents with complaints of vomiting and profuse sweating. The illness started five days ago with a mild nonproductive cough, nausea, vomiting and stomach cramps. He had a syncopal episode yesterday while at church.
On exam the patient is afebrile with orthostatic hypotension.

WBC is 13,300 (78% neutrophils, 11% lymphocytes, 8% monocytes), hematocrit is 51.4% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

12. Case AU. [Fatal inhalational anthrax]

A 61-year-old, non-smoking, female with hypertension presents with malaise, myalgias, fatigue, chills, chest pain, progressive dyspnea and cough productive of sputum which became blood tinged. She denies fevers. Her illness started three days earlier.

On exam the patient is awake, alert and completely oriented. She has a fever, heart rate of 110/minute, respiratory rate of 38/minute and oxygen saturation of 92% on room air. Blood pressure is normal. She has prominent jugular venous distension at 60 degrees. Rales can be auscultated to the apices bilaterally. Abdominal and cardiovascular examinations are normal except for tachycardia. There is no peripheral edema. She requires oxygen delivery through a non-rebreather mask to maintain her oxygen saturation.

WBC is 11,400 (83% neutrophils, 9% lymphocytes, 7% monocytes), hematocrit is 46.3% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

14. Case KX. [Fatal inhalational anthrax]

A 94-year-old female, with a history of chronic obstructive pulmonary disease, hypertension, and renal insufficiency, presents with complaints of fever, cough, weakness and muscle aches. She denies chills, headache, rhinorrhea, vomiting, diarrhea, abdominal pain and chest pain. Her illness started three days earlier.

On exam the patient is awake, alert and oriented. She has a temperature of 39.1°C (102.3°F), elevated heart rate, and oxygen saturation of 93% on room air. Physical examination is otherwise unremarkable.

WBC is 8,100 (78% neutrophils, 15% lymphocytes), hematocrit and platelet count are normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

3. Case AF. [Nonfatal inhalational anthrax]

A 73-year-old, non-smoking, male, with a history of a recent transient ischemic attack, presents with a history of progressive cough, worsening fatigue with lethargy, exertional dyspnea, fever and sweats. The illness started seven days ago with the onset of fatigue. A non-productive cough, intermittent fever, rhinorrhea and conjunctivitis developed four days later. He also complains of mild abdominal pain associated with vomiting and has had intermittent periods of confusion.

On exam the patient's temperature is 38.5°C (101.3°F) and pulse is 109/minute; blood pressure is 108/61 and respiratory rate is 20/minute. He has bilateral conjunctive injection and bilateral rhonchi on lung exam. The rest of the complete examination is normal.

WBC is 9,900 (72% neutrophils, 10% lymphocytes, 17% monocytes), hematocrit is 47.1% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

4. Case XG. [Nonfatal inhalational anthrax]

A 56-year-old, non-smoking, healthy male presents with complaints of a dry cough, chest heaviness, shortness of breath, night sweats, nausea and vomiting. The illness started three days ago with a low-grade fever, chills, sore throat, headache and malaise.

On exam the patient is afebrile with a pulse of 110/minute; blood pressure and respiratory rate are normal. He is in no acute distress. Lung exam shows decreased breath sounds and rhonchi at the left base. The rest of the complete examination is normal.

WBC is 7,500 (76% neutrophils, 8% bands, 7% lymphocytes, 7% monocytes), hematocrit is 46.9% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

5. Case CI. [Nonfatal inhalational anthrax]

A 56-year-old, non-smoking, healthy male presents with complaints of a worsening headache accompanied by low-grade fevers, chills, sore throat, myalgias, nausea, malaise, drenching sweats, intermittent blurred vision, photophobia, a mild dry cough, dyspnea on exertion, and pleuritic chest pain. The illness started four days ago with a mild headache.

On exam the patient is afebrile with a pulse of 127/minute; blood pressure is normal and respiratory rate is 20/minute. He is in no acute distress. Lung exam shows decreased breath sounds at both bases. The rest of the complete examination is normal.

WBC is 9,700 (43% neutrophils, 10% bands, 24% lymphocytes, 15% monocytes), hematocrit is 48.6% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

9. Case FN. [Nonfatal inhalational anthrax]

A 59-year-old, non-smoking, healthy male presents with complaints of drenching sweats, fatigue, severe myalgias, subjective fever, chills, headache, nausea, vomiting, abdominal pain, cough with scant white sputum, and substernal chest pain. There is no dyspnea or diarrhea. The illness started two days ago.

On exam the patient has a temperature of 38.2°C (100.8°F) and a heart rate of 116/minute; blood pressure and respiratory rate are normal.

WBC is 9,700 (79% neutrophils, 14% lymphocytes, 7% monocytes), hematocrit is 44.7% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

10. Case KQ. [Nonfatal inhalational anthrax]

A 56-year-old, non-smoking, female, with a history of a transient ischemic attack, presents with fever and worsening chest pain. Her illness started five days ago with vomiting and diarrhea followed by subjective fever and chills unrelieved by aspirin. Whereas the vomiting and diarrhea improved, she developed fevers to 38.4°C (101.1°F) with shaking chills, headache, fatigue, a non-productive cough, mild shortness of breath, and anterior chest pain with inspiration.

On exam the patient appears ill with increased respiratory effort and has a temperature of 38.4°C (101.1°F) and a heart rate of 120/minute, blood pressure of 159/95 and respiratory rate of 18/minute. Breath sounds are reduced at both bases. There is a 0.5-1.0 cm healing scab on the anterior neck.
WBC is 8,100 (56% neutrophils, 30% lymphocytes, 10% monocytes), hematocrit is 45.3% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

11. Case ZS. [Nonfatal inhalational anthrax]

A 43-year-old, non-smoking, healthy female presents with intermittent fevers, chills, dry cough, chest discomfort, shortness of breath, myalgias, and fatigue. She complains of nausea and vomiting, but has no abdominal pain or diarrhea. She reports "head stuffiness" without rhinorrhea or sore throat. She also has a headache and was reported to be mildly confused. Her illness started on the previous day.

On exam the patient has a temperature of 38.0°C (100.4°F).

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

7. Case PK. [Influenza A]

A 35-year-old, non-smoking, male, with a history of chronic neck pain and diabetes, presents with complaints of fever, headache, increased neck pain, chest congestion with cough, nausea, vomiting, fatigue and dizziness. The illness started five days ago and he is feeling slightly better today, though is concerned about the tight chest congestion.

On exam the patient has a temperature of 37.3°C (99.1°F) with normal pulse and blood pressure of 124/82. He is in no distress. His respiratory rate is normal. There is no nuchal rigidity. The lung examination is significant for bilateral rales and rhonchi. The remainder of the exam is normal.

WBC is 9,000 (78% neutrophils, 22% lymphocytes and monocytes), hematocrit is 41.0% and platelet count is normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

13. Case SV. [Influenza A]

A 61-year-old female, with a history of chronic obstructive pulmonary disease, tobacco use and diabetes, presents with complaints of fever and cough. Her illness began three days ago with a productive cough, nasal congestion and nasal discharge, but has become worse in the last 24 hours. She also reports myalgia, arthralgia, malaise and anorexia. Her diabetic control has become worse over the last four to five days.

On exam the patient is alert and in no distress. She has a temperature of 37.7°C (99.8°F) with normal heart rate and respiratory rate. Blood pressure is 120/72. HEENT examination is normal except for an erythematous pharynx. Exam of neck, lungs, and heart are normal.

WBC, hematocrit, and platelet counts are normal.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**

2. Case LC. [*Legionella* pneumonia]

A 49-year-old male, with a history of tobacco use and alcoholism, presents with complaints of shortness of breath, weakness, cough, pleuritic chest pain, sweats and fever. His illness begin eight days ago with upper respiratory tract symptoms and cough. His reported feeling better, then had significant worsening of symptoms over the past 24 hours. There was no history of headache, nausea or vomiting.

On exam the patient is alert and interactive. He is fully oriented. His temperature is 35.8°C (96.5°F). His initial blood pressure is measured at 84/palpable, but after a liter of intravenous normal saline his BP is 102/72 with a pulse of 102/minute. His oxygen saturation is 89% on room air, rising to 93% on 2 liters/minute of oxygen. Except for slight tachycardia, cardiovascular exam is normal. Examination of lungs demonstrates decreased breath sounds bilaterally and a mild expiratory wheeze, but no rales. His abdomen is soft with mild epigastric tenderness. Neurological exam is normal.

WBC is 2,900 (84% neutrophils, 8% lymphocytes, 7% monocytes), hematocrit is 50%, and platelet count is low at 130,000.

What is your clinical diagnosis: _____

Based upon the above information and your clinical diagnosis:

would you hospitalize this patient?	**Yes**	**No**
would you obtain a chest X-ray at clinic?-	**Yes**	**No**
would you obtain a blood culture at clinic?	**Yes**	**No**
would you initiate antibiotic therapy at clinic?	**Yes**	**No**