Tetanus Immunity

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Note to Instructors

This workbook is divided into five sections:

1. Introduction to the POPS System, introduction to and objectives of the clinical simulation, and a pretest
2. Color-coded booklets with pretest answers and the clinical problem
3. Group question and answer sheets
4. Posttest
5. Posttest answers

Each student should receive a copy of the first section to study and answer questions before the group problem-solving session. If you wish, the second section also may be distributed for the students to review prior to the group session.

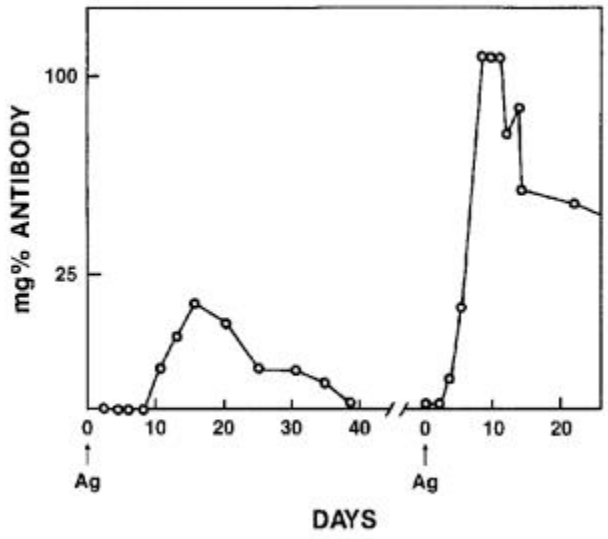
Pretest

Instructions: Please mark your answers to the following questions on this exam to facilitate later discussion and review. If your instructor has provided a separate answer form, please be sure to fill in the identification section; then answer the questions both on the form and on this exam.

Choose the one correct or most appropriate answer. If you do not know an answer, leave it blank. Do not guess. Health professionals who think they know something, but don't, can do real harm. Those who know they don't know something can get help.

Don't be upset if you don't know all the answers. The purpose of the pretest and objectives is to alert you to important concepts. The posttest will be similar to the pretest.

1. Judging from the following graph, how many days does it take to detect antibody in the serum after a primary and a secondary immunization, respectively? The arrows above "Ag" indicate the times when antigen injections were given to the patient. The term "mg% Antibody" refers to the number of milligrams of antibody detected in 100 mL of the patient's serum.



(A) 15 and 10
(B) 10 and 15
(C) 10 and 4
(D) 4 and 10
(E) 3 and 3

Pretest (ctd.)

2. A car accident victim, who is 12 years old, suffered severe lacerations when she was thrown clear of the vehicle and has just been brought into the hospital. Her parents stated that she has not had previous immunization against tetanus. To provide protection against the possibility of tetanus now and in the future, which of the following is the preferred method of treatment?

(A) A mixture of tetanus toxoid and tetanus antitoxin as one injection, thereby causing less pain and producing an adjuvant effect
(B) A tetanus antitoxin injection this visit
(C) A tetanus toxoid injection this visit, with an injection of tetanus antitoxin approximately three weeks later
(D) Separate injections of tetanus toxoid and tetanus antitoxin in different sites on this visit to ensure active and passive immunization
(E) None of the above

3. In which of the following pairs will the first substance function as an antigen to elicit a potentially beneficial immune response and the second substance function as an antigen to produce a potentially dangerous immune response? (Homologous means "made in the same species" [e.g., humans], whereas heterologous means "made in a different species" [e.g., horses].)

(A) Toxin and toxoid
(B) Toxoid and toxin
(C) Heterologous antiserum and toxin
(D) Homologous antiserum and heterologous antiserum
(E) Toxoid and heterologous antiserum

4. Tetanus toxoid

(A) is an active toxin.
(B) cannot react with antibody to tetanus toxin.
(C) retains antigenicity for immunization purposes.
(D) is chemically identical to tetanus toxin.
(E) stimulates antibody formation to the organism Clostridium tetani.

5. You have decided your patient needs passive immunization for snake bite, but the only available antisera are from horses. The following important aspect must be taken into account before administering the serum:

(A) The patient's blood type
(B) The patient's history of passive immunizations
(C) The patient's history of active immunizations
(D) The snake's blood type
(E) The half-life of the passive antibody, which is such that passive immunization should be repeated every six to eight months if protection is to be maintained

6. A typical secondary (anamnestic) response is characterized by a change in antibody level. The type of change differs from a primary response, since it is usually

(A) neither higher nor faster, but is more prolonged.
(B) higher, but no sooner.
(C) sooner, but no higher.
(D) sooner, higher, and more prolonged.
(E) sooner and higher, but less prolonged.

Pretest (ctd.)

7. The passive immunity to tetanus provided by antisera is

(A) nonspecific and innate.
(B) acquired and antibody-mediated.
(C) innate and specific.
(D) acquired and cell-mediated.
(E) none of the above.

8. The immunity to many bacteria such as streptococci and staphylococci provided by intact skin (i.e., bacteria on your skin will not usually produce disease) is

(A) specific and innate.
(B) acquired and antibody-mediated.
(C) innate and nonspecific.
(D) acquired and cell-mediated.
(E) innate and antibody-mediated.

9. Serum sickness can be a serious problem with which of the following procedures?

(A) Active immunization with tetanus toxin
(B) Active immunization with tetanus toxoid
(C) Passive immunization against tetanus using heterologous antiserum
(D) Passive immunization against tetanus using homologous antiserum
(E) None of the above

10. A 25-year-old man who recently sustained a severe, dirty laceration of his right foot is brought to you. He has never received any immunizations. At age 7 he had tetanus. He was treated with penicillin and tetanus immune globulin (human). Fortunately, he recovered. Which of the following would you do to prevent tetanus now?

(A) Immunize with tetanus toxoid, which will stimulate a secondary antibody response.
(B) Administer tetanus immune globulin (human) to passively immunize the patient.
(C) Administer tetanus immune globulin (human) in addition to tetanus toxoid, because you cannot depend on a secondary immune response after 18 years.
(D) Administer tetanus immune globulin (human) plus tetanus toxoid, because the patient has absolutely no immunity to tetanus.
(E) Give no injection, because the residual immunity from the clinical tetanus will protect the patient.

When you have completed the pretest, consult your study materials. Try to identify the correct answers and understand the concepts that make them correct. The list of objectives may be used as a guideline for your studies. When your group meets, you will have the responsibility of explaining some of the correct pretest answers to the others. Please bring your textbook and pretest to the group meeting.