

# Naturally Acquired versus Artificially Acquired Immunity

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## OBJECTIVE / RATIONALE

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The ability to develop immunity to diseases is a key factor in maintaining health and wellness. The student will learn the difference in naturally acquired and artificially acquired immunity.

TEKS 121.15 2A, 2B, 2C, 2D, 5C

TAKS ELA 1, 4, 6  
Social Studies 1, 2, 3, 6

National Science Education Standards A9-12; C9-12, F9-12; G9-12

National Health Care Skills Standards .01, .07, .09

National Curriculum Standards for School Mathematics S1; S3

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## KEY POINTS

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### I. Naturally Acquired Immunity

A. Active Immunity - Immunity may be acquired by exposure to a disease.

1. Antibodies

a. Manufactured by the body and act against the infecting agent.

b. Formation can occur repeatedly each time a person encounters the infecting agent.

2. Lasts many years and sometimes for life

B. Passive Immunity - Immunity may be acquired naturally by a fetus through the passage of antibodies from the mother through the placenta or through breast milk to a nursing infant.

1. Antibodies come from an outside source.

2. Antibodies are temporary (antibodies will protect for up to 6 months or longer if the mother continues nursing)

### II. Artificially Acquired Immunity

A. Vaccination or immunization - An agent is introduced into the body to stimulate antibody production.

B. Vaccines

1. Live organisms - used must be nonvirulent for humans or treated in the lab to weaken them so they are not as pathogenic to humans.

2. Attenuated - an organism that has been weakened is called.

3. Killed - vaccination with a toxoid occurs when the toxin produced by an organism is altered with heat or chemicals to render it harmless, but still allow the body to make antibodies against it.

4. Examples of Vaccines

a. smallpox -

b. Pertussis -

- c. Diphtheria
  - d. Tetanus
  - e. *Haemophilus influenzae* type B –
  - f. Polio
  - g. measles
  - h. mumps
  - i. rubella
  - j. Hepatitis B
  - k. Chicken pox
5. Immunity may or may not be life-long with vaccines. To help keep the antibody levels high enough to keep you protected you sometimes need to have “booster shots”.

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#### ACTIVITIES

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- I. Investigate the history of a particular type of vaccine and the ramifications if the vaccine were not invented. Present this to the class using your choice of media.
- II. Debate mandatory immunizations for school children using HOSA Guidelines. (religious beliefs, cultures, etc.)

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#### MATERIALS / RESOURCES

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**HOSA Event Guidelines – <http://www.hosa.org>**

<http://www.tdh.gov>

*The Medicine Man*

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#### ASSESSMENT

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**HOSA Event Guidelines – <http://www.hosa.org>**

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#### ACCOMMODATIONS

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For reinforcement, the student will design a community awareness pamphlet on vaccination schedules. Include why vaccinations are necessary for all age groups.

For enrichment, the student will research and report on the ramifications of students not being vaccinated to the total population of the school.

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#### REFLECTIONS

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