Foundations of Health and Safety

This course is a .5 credit elective offered within the Health and Physical Education department that offers a thorough overview to help students recognize and respond appropriately to cardiac, breathing and first aid emergencies. In addition, this course will also cover common cancers, bacterial infections and viral illnesses and how to treat/cure them, as well as, if any, how to prevent them. This course teaches skills that students need to know to give immediate care to a suddenly injured or ill person until more advanced medical personnel arrive and take over. We will focus on basic first aid guidelines, and the use of CPR/AED when needed. The students will analyze different scenarios and act in the appropriate manner in order to help the victim. Upon conclusion of this course, students will have the opportunity to earn an American Red Cross certification (valid for 2 years) in the following areas:

1. Adult/Child/Infant CPR
2. Adult/Pediatric AED
3. Basic First Aid and Safety
4. Anaphylaxis and Epinephrine Auto-Injector
5. Using a Tourniquet
6. Asthma Inhaler

***Course Information:***

**Frequency & Duration:**  Averaging 42 minutes per day; 5 days per week; one semester

**Text:** No Formal Text. Information taken from the Instructor’s Manual provided by the American Red Cross.

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| **Content:** Intro to First Aid/When to Respond | | **Duration:** Week 1 (1 week) |
| **Essential Question:** | How do you recognize emergency situations and respond appropriately? | |
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| **Skill:** | * When is it appropriate to call 911 vs starting care first. * Describe what to look for when sizing up the scene. * Identify emergency actions steps, Check-Call-Care. * Recognize life-threatening conditions. * Demonstrate how to use the SAMPLE technique to interview an injured person. * Demonstrate/Describe how to check an injured person who is responsive/unresponsive. | |
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| **Assessment:** | * Given a situation, students are able to assess the severity of a situation and respond accurately. * When arriving at a situation, students respond with check, call, care. * Students will be able to demonstrate how to interview an injured person using the SAMPLE technique. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 29-42.  First Aid/CPR/AED DVD .  Student training kits for CPR and First Aid. | |
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| **Standards:** | 10.3.12.B Analyze and apply strategies for the management of injuries. (CPR and First Aid) | |
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| **Vocabulary:** | **Anaphylaxis –** severe allergic reaction; **Good Samaritan Laws –** help to protect people who voluntarily give care in good faith without accepting anything in return; **PPE –** Personal Protective Equipment, i.e. latex-free disposable gloves, CPR breathing barriers, face masks and eye protection; **SAMPLE** – mnemonic device stands for **S** signs and symptoms, **A** allergies, **M** medications, **P** pertinent medical history, **L** last food or drink, **E** events leading up to the incident. | |

**Comments**

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| **Content:** Cardiac Emergencies and Giving CPR | | **Duration:** Week 2 thru Week 3 (2 weeks) |
| **Essential Question:** | How do you recognize a cardiac emergency and know when to give CPR? | |
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| **Skill:** | * Recognize the signs and symptoms of a heart attack. * Describe first aid care for a heart attack. * Explain the differences between cardiac arrest and heart attack. * List causes of cardiac arrest. * Describe the links in the Cardiac Chain of Survival. * Demonstrate how to perform CPR. | |
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| **Assessment:** | * Students are able to describe the symptoms of a heart attack. * Students are able to demonstrate how to provide first aid care for someone having a heart attack. * When provided with a heart attack scenario, students are able to demonstrate the links in the cardiac chain of survival. * Students are able to properly perform CPR using a manikin. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 43-55.  First Aid/CPR/AED DVD.  Student training kits including CPR breathing barriers and latex-free disposable gloves.  Adult and Infant manikins. | |
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| **Standards:** | 10.3.12.B | |
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| **Vocabulary:** | **Cardiac arrest** – occurs when the heart stops beating or beats too ineffectively to circulate blood to the brain and other vital organs; **cardiac catheterization** - when a long, thin tube called a catheter is inserted into a vein or artery in the groin, neck, or arm and threaded through your blood vessels to your heart; **Heart attack** – occurs when blood flow to part of the heart muscle is blocked. | |

**Comments:**

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| **Content:** Using an AED | | **Duration:** Week 4 (1 week) |
| **Essential Question:** | During what situations should an AED by used and why? | |
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| **Skill:** | * Define defibrillation and explain how it works to restore heart rhythm. * Understand the value of using an AED along with CPR. * Know how to use an AED in various special situations. * Identify precautions to take when using an AED. | |
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| **Assessment:** | * Students are able to define defibrillation and properly explain how it shocks the heart into an effective rhythm. * Students are able to explain the value of using an AED along with CPR. * Students will demonstrate how to use an AED in various special situations. * Students will be able to identify precautions to take when using an AED. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 56-68.  First Aid/CPR/AED DVD.  AED training devices and pads.  Pediatric AED training devices and pads.  Student training kits including CPR breathing barriers and latex-free disposable gloves.  Adult and Infant manikins. | |
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| **Standards:** | 10.3.12.B | |
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| **Vocabulary:** | **AED** – automated external defibrillator - a portable device that checks the heart rhythm and can send an electric shock to the heart to try to restore a normal rhythm; **Adult Cardiac Chain of Survival** – Recognition of cardiac arrest and activation of the EMS system, Early CPR, Early Defibrillation, Early advanced life support, Integrated post-cardiac arrest care; **Pediatric Cardiac Chain of Survival** – Prevention, Early CPR, Activation of the EMS system, Early advanced life support, Integrated post-cardiac arrest care. | |

**Comments:**

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| **Content:** Choking | | **Duration:** Week 5 (1 week) |
| **Essential Question:** | How do you know when an individual is choking and what should you do? | |
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| **Skill:** | * List risk factors for choking. * Name common choking hazards for children younger than 5 years. * Recognize when a person is choking. * Demonstrate how to care for a person who is choking. | |
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| **Assessment:** | * Students are able to list risk factors for choking. * Students will be able to name common choking hazards for children under 5 years. * When given a scenario, students will properly identify when a person is choking. * Students will be able to demonstrate how to care for a person who is choking. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 69-78.  First Aid/CPR/AED DVD.  Latex-free disposable gloves.  Infant manikins. | |
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| **Standards:** | 10.3.12.B | |
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| **Vocabulary:** | No new vocabulary for this content. | |

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| **Content:** Sudden Illness | | **Duration:** Week 6 (1 week) |
| **Essential Question:** | How do you recognize and respond to common sudden illnesses? | |
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| **Skill:** | * Recognize the signs and symptoms of shock and describe appropriate care for a person in shock. * Recognize and respond to common sudden illnesses, including cardiovascular emergencies, breathing emergencies, diabetic emergencies, seizures and fainting. | |
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| **Assessment:** | * Given a scenario, students will be able to recognize the signs and symptoms of shock, cardiovascular emergencies, breathing emergencies, diabetic emergencies, seizures and fainting. * Students will be able to properly demonstrate how to care for an individual suffering from shock, cardiovascular emergencies, breathing emergencies, diabetic emergencies, seizures and fainting. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 79-90.  First Aid/CPR/AED DVD.  Latex-free disposable gloves.  Epinephrine auto injector training device. | |
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| **Standards:** | 10.3.12.B | |
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| **Vocabulary:** | **Absence seizure** – person experiences a brief, sudden lapse of consciousness (person becomes very quiet and has a blank stare; **Chronic obstructive pulmonary disease (COPD)** – progressive respiratory disease that makes it harder to breathe over time, includes chronic bronchitis and emphysema; **Diabetes** – a condition that makes it difficult for the body to process glucose (sugar) in the blood; **Epinephrine** – a drug that slows or stops the effects of anaphylaxis; **Fainting** – temporary loss of consciousness caused by a sudden decrease in blood flow to the brain; **FAST** – mnemonic device to check for signs and symptoms of stroke – **F** face – ask the person to smile, **A** arms – ask the person to raise both arms, **S** speech - ask the person to repeat the simple sentence, “The sky is blue.”, **T** time – if you observe any of these signs, call 9-1-1 immediately; **Febrile seizures** – seizures brought on by a rapid increase in body temperature; **Grand mal seizure** – person experiences loss of consciousness and convulsions; **Hemorrhagic stroke** – occurs when a blood vessel in the brain ruptures, causing bleeding into the brain; **Hyperglycemia** – excessively high blood glucose levels; **Hypoglycemia** – excessively low blood glucose levels; **Ischemic stroke** – occurs when a clot blocks an artery that supplies part of the brain tissue; **Seizure** – the result of abnormal electrical activity in the brain, which leads to temporary and involuntary changes in body movement, function, sensation, awareness or behavior; **Shock** – occurs when the heart and blood vessels are not able to supply all parts of the body with enough blood and body systems begin to fail; **Stroke** – occurs when blood flow to part of the brain is interrupted, resulting in the death of brain cells. | |

**Comments:**

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| **Content:** Injuries | | **Duration:** Week 7 (1 week) |
| **Essential Question:** | How do you recognize and respond to common injuries, including open wounds; burns; muscle, bone and joint injuries; and head, neck and spinal injuries? | |
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| **Skill:** | * Recognize and respond to common injuries, including open wounds; burns; muscle, bone and joint injuries; and head, neck and spinal injuries. * Demonstrate how to control external bleeding using direct pressure. * Explain when a commercial tourniquet should be used, and describe the basic principles of using a tourniquet. | |
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| **Assessment:** | * When given a scenario, students will be able to recognize common injuries, including open wounds; burns; muscle, bone and joint injuries; and head, neck and spinal injuries. * Students will be able to demonstrate how to respond to common injuries, including open wounds; burns; muscle, bone and joint injuries; and head, neck and spinal injuries. * Using the student training kit provided, students will be able to demonstrate how to control external bleeding using direct pressure. * Students will be able to explain when and how a commercial tourniquet should be used. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 91-102.  First Aid/CPR/AED DVD.  Student Training Kits for CPR and/or First Aid including:   * Latex-free disposable gloves * Gauze pads * Roller bandages | |
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| **Standards:** | 10.3.12.A Assess the personal and legal consequences of unsafe practices in the home, school or community (including personal injury).  10.3.12.D Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities.  10.3.12.B | |
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| **Vocabulary:** | **Concussion** – a traumatic brain injury that alters the way the brain functions; **Dislocation** – occurs when the bones that meet at a joint move out of their normal position; **Fracture** – complete break, a chip or crack in a bone; **Hemostatic dressing** – a dressing treated with a substance that speeds clot formation; **Ligaments** – connect bones to bones at the joint; **RICE** – mnemonic device to remember how to care for a muscle, bone or joint injury – **R** = rest, **I** = immobilization, **C** = cold**, E** = elevation; **Sprain** – occurs when a ligament is stretched, torn or damaged; **Strain** – occurs when a muscle or tendon is stretched, torn, or damaged; **Tendons** – attach muscles to bones; **Tourniquet** – a device placed around an arm or leg to constrict blood vessels and stop blood flow to an open wound; | |

**Comments:**

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| **Content:** Environmental Emergencies | | **Duration:** Week 8 (1 week) |
| **Essential Question:** | How do you recognize and respond to hot and cold weather related illnesses? | |
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| **Skill:** | * Recognize and respond to common environmental emergencies, including heat-related illnesses, cold-related emergencies and poisoning. | |
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| **Assessment:** | * When provided a scenario, students will be able to properly identify the environmental emergency. * Students will be able to demonstrate how to respond to common environmental emergencies. | |
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| **Resources:** | Instructor’s Manual from the American Red Cross, pages 103-109.  First Aid/CPR/AED DVD. | |
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| **Standards:** | 10.2.12.E Analyze the interrelationship between environmental factors and community health.  10.3.12.B | |
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| **Vocabulary:** | **Frostbite** – injury caused by freezing the skin and underlying tissues as a result of prolonged exposure to freezing or subfreezing temperatures; **Heat cramps** – painful muscular cramps that occur during or after exercise or during work in a hot environment; **Heat exhaustion** – condition whose symptoms may include a rapid pulse and profuse sweating, a result of your body over-heating; **Heat stroke** – condition caused by your body overheating, usually as a result of prolonged exposure to or physical exertion in high temperatures; **Hypothermia** – potentially life-threatening condition that occurs when the body loses heat faster than it can produce heat, causing the core body temperature to fall below 95 degrees Fahrenheit; **Poison** – any substance that causes injury, illness or death if it enters the body. | |

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| **Content:** Cancer | | **Duration:** Week 9 thru week 10 (2 weeks) |
| **Essential Question:** | Are there any preventative measures to take to reduce your chances of the most prevalent forms of cancer? | |
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| **Skill:** | * Explain what the most prevalent forms of cancer are. * Describe ways to reduce your chances of developing common cancers. * Research potential cures for certain cancers. | |
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| **Assessment:** | * Students will be able to explain what the most prevalent forms of cancer are and why. * Students will be able to describe ways to reduce your chances of developing common cancers. * Students will research a common form of cancer and describe potential cures/treatments. | |
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| **Resources:** | Research project  [www.mayoclinic.org](http://www.mayoclinic.org)  www.cdc.gov | |
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| **Standards:** | 10.1.12.A. Evaluate factors that impact growth and development during adulthood and late adulthood.  10.1.12.B Evaluate factors that impact body systems and apply protective/preventive strategies.  10.1.12.E Identify and analyze factors that influence the prevention and control of health problems.  10.4.12.C Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. (aging, injury, disease) | |
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| **Vocabulary:** | **Benign**- (of a disease) not harmful in effect: in particular, (of a tumor) not malignant; **Carcinoma** - a cancer arising in the epithelial tissue of the skin or of the lining of the internal organs; **Hodgkin’s Lymphoma** - a cancer of the lymphatic system, which is part of your immune system where cells in the lymphatic system grow abnormally and may spread beyond the lymphatic system; **Leukemia** - a malignant progressive disease in which the bone marrow and other blood-forming organs produce increased numbers of immature or abnormal leukocytes. These suppress the production of normal blood cells, leading to anemia and other symptoms; **Lymphoma -** form of cancer that affects the immune system - specifically, it is a cancer of immune cells called lymphocytes, a type of white blood cell; **Malignant** - very serious **and** dangerous : tending or likely to grow and spread in a rapid and uncontrolled way that can cause death; **Melanoma -**   the most serious type of skin cancer, develops in the cells (melanocytes) that produce melanin — the pigment that gives your skin its color; **Non-Hodgkin’s Lymphoma** - a form of malignant lymphoma distinguished from Hodgkin's disease only by the absence of binucleate giant cells; **Sarcoma** - a malignant tumor of connective or other nonepithelial tissue;. | |

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| **Content:** Viral infections | | **Duration:** Week 11 thru week 12 (2 weeks) |
| **Essential Question:** | How can you prevent and/or treat common viral illnesses? | |
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| **Skill:** | * Explain what the most common viral illnesses are. * Describe ways to prevent acquiring common viral illnesses. * Research why some viral illnesses are fatal. | |
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| **Assessment:** | * Students will be able to explain what the most common viral illnesses are in the United States. * Students will be able to describe ways to prevent acquiring common viral illnesses. * Students will complete a research project on a potentially fatal viral illness. | |
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| **Resources:** | Research project  [www.cdc.gov](http://www.cdc.gov)  www.nlm.nih.gov | |
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| **Standards:** | 10.1.12.A. 10.1.12.B 10.1.12.E 10.4.12.C | |
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| **Vocabulary:** | **Antiviral Drugs -** Drugs that combat viral infections ; **Chicken Pox -** an acute contagious disease especially of children marked by low-grade fever and formation of vesicles and caused by a herpesvirus (species Human herpesvirus 3 of the genus Varicellovirus); **Human Papillomavirus (HPV) -** A family of over 100 viruses including those which cause warts and are transmitted by contact. Some types of human papillomavirus are associated with tumors of the genital tract including, notably, cancer of the cervix; **Immune globulin -** a sterilized solution of antibodies (also called immunoglobulins) collected from a group of people; **Influenza -** a highly contagious viral infection of the respiratory passages causing fever, severe aching, and catarrh, and often occurring in epidemics; **Interferon Drugs** - replicas of naturally occurring substances that slow or stop viral replication; **Mononucleosis** - an abnormally high proportion of monocytes in the blood; The virus that causes mono is transmitted through saliva, so you can get it through kissing, but you can also be exposed through a cough or sneeze, or by sharing a glass or food utensils with someone who has mono; **Pneumonia** - an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus (purulent material), causing cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses and fungi, can cause **pneumonia; Shinlges** - an acute, painful inflammation of the nerve ganglia, with a skin eruption often forming a girdle around the middle of the body. It is caused by the same virus as chickenpox; **Swine Flu** - a highly contagious form of influenza caused by infection with a filterable virus first isolated from swine; **Vaccine** - materials that help prevent infection by stimulating the body's natural defense mechanisms; **Virus** - an infective agent that typically consists of a nucleic acid molecule in a protein coat, is too small to be seen by light microscopy, and is able to multiply only within the living cells of a host; **West Nile Virus -** A mosquito-transmitted virus that causes minor symptoms, such as fever and a mild headache; **Zika** - caused by **Zika** virus and is spread to people primarily through infected Aedes mosquitos, no vaccine exists, prevent **Zika** by protecting against mosquito bites. | |

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| **Content:** Bacterial Infections | | **Duration:** Week 13 thru week 14 (2 weeks) |
| **Essential Question:** | How can you prevent and/or treat common bacterial infections? | |
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| **Skill:** | * Explain what the most common bacterial infections are. * Describe ways to prevent acquiring common bacterial infections. * Research how a bacterial infection can become fatal. | |
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| **Assessment:** | * Students will be able to explain what the most common bacterial infections are in the United States. * Students will be able to describe ways to prevent acquiring common bacterial infections. * Students will complete a research project focusing on how a certain bacterial infection can become fatal. | |
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| **Resources:** | Research project  [www.cdc.gov](http://www.cdc.gov)  www.nlm.nih.gov | |
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| **Standards:** | 10.1.12.A. 10.1.12.B 10.1.12.E 10.4.12.C | |
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| **Vocabulary:** | **Antibiotics** - a substance, such as penicillin, that is capable of destroying or weakening certain microorganisms, especially bacteria or fungi, that cause infections or infectious disease; **Bacteria** - microscopic living organisms, usually one-celled, that can be found everywhere. They can be dangerous, such as when they cause infection, or beneficial, as in the process of fermentation (such as in wine) and that of decomposition; **Bacterial Meningitis** - a medical emergency requiring immediate diagnosis and immediate treatment. Streptococcus pneumoniae and Neisseria meningitides are the most common and most aggressive pathogens of **meningitis**. Emerging antibiotic resistance is an upcoming challenge; **Boils** – a bacterial infection that causes deep skin infections that start in hair follicles. Boils are firm, red, tender bumps that progress until pus accumulates underneath the skin; **Cellulitis** - a painful, red infection that is usually warm to the touch; **Folliculitis** – a bacterial infection of the hair follicles that causes red, swollen bumps that look like pimples. Improperly treated pools or hot tubs can harbor bacteria that cause folliculitis; **Impetigo** – a bacterial infection that causes oozing sores, usually in preschool-aged children. The bullous form of impetigo causes large blisters while the non-bullous form has a yellow, crusted appearance; **Methicillin-Resistant Staphylococcus Aureus (MRSA) –** an infection caused by a type of staph bacteria that's become resistant to many of the antibiotics used to treat ordinary staph infections; **Probiotics** - live microorganisms that, when administered in adequate amounts, confer a health benefit on the host; **Salmonella** - a common bacterial disease that affects the intestinal tract. **Salmonella** bacteria typically live in animal and human intestines and are shed through feces. Humans become infected most frequently through contaminated water or food; **Staphylococcus Aureus** - a gram-positive coccal bacterium that is a member of the Firmicutes, and is frequently found in the nose, respiratory tract, and on the skin. It is often positive for catalase and nitrate reduction. | |

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| **Content:** Epidemiology | | **Duration:** Week 15 thru week 16 (2 weeks) |
| **Essential Question:** | How can we treat/cure fatal illnesses? | |
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| **Skill:** | * Explain new medicinal tools used to treat/cure fatal illnesses. * Describe the strides of stem cell research. * Research new medicines to cure fatal illnesses. | |
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| **Assessment:** | * Students will be able to explain new medicinal tools used to treat/cure fatal illnesses. * Students will describe how stem cell research is used to treat/cure fatal illnesses. * Students will complete a research project explaining new medicines used to cure fatal illnesses. | |
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| **Resources:** | Research project  [www.cdc.gov](http://www.cdc.gov)  www.nature.org | |
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| **Standards:** | 10.2.12.A Evaluate health care products and services that impact adult health practices.  10.2.12.B Assess factors that impact adult health consumer choices.  10.1.12.E 10.2.12.E | |
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| **Vocabulary:** | **Bryostatin** - a drug developed from the bryozoan, has been showing encouraging results in several early clinical trials, especially in combination with chemotherapy drugs in fighting cancer cells; [**Discodermalide**](https://www.google.com/search?biw=1280&bih=699&q=Discodermalide+definition&nfpr=1&sa=X&ved=0ahUKEwiw1PDp95jNAhUl6KYKHYkPCXMQvgUIGigB) – a compound within a marine sponge used to stop cancer cells from reproducing; **Epidemiology** - the branch of medicine that deals with the incidence, distribution, and possible control of diseases and other factors relating to health; **Stem cells** - have the remarkable potential to develop into many different cell types in the body during early life and growth; **Immunotherapy** - a type of biological therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases; **Secosteroids** - an enzyme used by corals to protect themselves from disease, is used to treat asthma, arthritis and other inflammatory disorders; **Taxol** - a natural product in a newly described endophytic fungus living in the yew tree;   **Yondelis** -  the first new treatment in 30 years for soft-tissue sarcoma, is extracted from the sea squirt, a sac-like filter feeder; | |

**Comments:**