LEARNING GOALS: After the completion of this workshop, students will understand:

1. How to perform basic triage and diagnosis
2. How does emergency first aid differ from triage?
3. How to treat wounds and suture
4. Wide variety of careers in the healthcare field

CONCEIVE – What do I wish to accomplish through this project?

This stage involves guiding students in defining the goals of the project, then helping them develop conceptual, technical and action plans to meet those goals while considering the technology, knowledge, and skills that apply. This guidance is provided in the form of Essential Questions that use student’s preconceptions, and misperceptions then move them toward a deeper and more realistic understanding of the process and skills needed to complete the project.

ESSENTIAL QUESTIONS:

1. The importance of first response medicine
2. How does a health practitioner know the difference between life or death situations and minor injuries/illnesses?
3. What diagnosis tools are available to assist health care practitioners in making their assessments?
4. How do you treat children vs. adults?

NOTES:

DESIGN - How will I accomplish the project?

This stage focuses on creating the plans, drawings and algorithms that describe the product, process or system that will be implemented.

Have students meet in a briefing room. Explain the basics of triage and why it is important. Explain the difference in triage vs. emergency medicine that first responders (EMT) perform. (What is the difference????)
Diagnostic tools: Blood pressure, pulse rate, X-ray, CT scan, Ultrasound, Urine test, Strep test, bacteria vs virus, and a short explanation of the difference of each in a power point.

Explain that they will be seeing three patients and rotating through the stations. They will be responsible for writing up the SOAP note (Subjective Objective Assessment Plan) for each patient to treat their symptoms or injuries.

Add in all of the different professions in the health and emergency medicine field.


See included power point for explanations and activities related to the above

What the students will not know is that as they are rotating through the triage stations, they will have an EMT team come in with an emergency. A climber has fallen at Garden of the Gods and received a gash and sprained ankle. This will turn into Station 4.

NOTES:

IMPLEMENT - From an idea to a product!
This stage refers to the transformation of the design into a product. It includes hardware, manufacturing, software coding, testing and validation.

**Station 1: Chest Pain** – 42 year old female (Attachment 1 – SOAP form)

**Station 2: Abdominal Pain** – 30 year old female (Attachment 2 – SOAP form)

**Station 3: Sick Visit** – 4 year old female (Attachment 3 – SOAP form)

**Station 4: Emergency fall** – 23 year old male

If time permits you could add an exercise at the end using a pulse oximeter. The students can use it standing and walking. Or if the equipment is not available then have students breathe into a straw both standing still and exercising. This exercise demonstrates asthma or breathing issues in a patient.
OPERATE – Does it work the way I planned?
This stage uses the built product, process or system to satisfy the intended goal.

RESOURCES NEEDED – What equipment and supplies do I need?

Station 1: Equipment needed:

1. Surgical gloves
2. Hand sanitizer
3. Sample chest x-ray
4. Stethoscope
   

Station 2: Equipment needed:

1. Surgical gloves
2. Simulated urine and urine dip to test for nitrates and glucose
   
3. Sample Ultrasound or CT scan If you want patient to be pregnant you can use
   
   http://www.youtube.com/watch?v=GFUWUKED_R0 14 weeks or
   
   http://www.youtube.com/watch?v=e8sO6W6rLh0&feature=related 6 weeks OR
   
   CT scan of abdomen http://www.youtube.com/watch?v=X0ywJIOozbE
4. hand sanitizer

Station 3:

2. Rapid Strep test
3. Have students use (Attachment 4) Amoxicillin dose calculation sheet
4. Hot dogs or oranges (PVC pipes)
5. TB syringes with needles (Explain the two types of shots – Intramuscular injection
   
   http://www.drugs.com/cg/how-to-give-an-intramuscular-injection.html or
   
   Subcutaneous injection http://www.drugs.com/cg/how-to-give-a-subcutaneous-injection.html
Station 4:

2. Bananas
3. Gloves
4. Alcohol wipes
5. Suture needles
7. Suture clips
8. Cold compress, hot pad - explain when to use heat or cold on different injuries

SET-UP

You can modify the patients and their SOAP forms depending on who you have available to play the part of the different patients. Station 3 you could skip the patient and just have the hot dogs, strep tests, etc.

Set-up each station. You will need someone to facilitate each station and identify one of the facilitators to do the introduction power point. Have station 4 facilitator stay out of room until students are ready to move to the next station after their first rotation. Then come rushing into the room with the wounded patient.
### Colorado State Standards - High School

<table>
<thead>
<tr>
<th>2. Life Science</th>
<th>Concepts and skills students master:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6. Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environment</td>
</tr>
<tr>
<td></td>
<td>8. Multicellularity makes possible a division of labor at the cellular level through the expression of select genes, but not the entire genome</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>21st Century Skills</th>
<th>Students can:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Develop, communicate, and justify an evidence-based scientific explanation of how cells form specialized tissues due to the expression of some genes and not others</td>
</tr>
<tr>
<td></td>
<td>b. Analyze and interpret data that show most eukaryotic deoxyribonucleic acid (DNA) does not actively code for proteins within cell</td>
</tr>
</tbody>
</table>

### Colorado State Standards – Eighth Grade

<table>
<thead>
<tr>
<th>2. Life Science</th>
<th>Concepts and skills students master:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Organisms reproduce and transmit genetic information (genes) to offspring, which influences individuals’ traits in the next generation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>21st Century Skills</th>
<th>Students can:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Develop, communicate, and justify an evidence-based scientific explanation for how genetic information is passed to the next generation</td>
</tr>
<tr>
<td></td>
<td>b. Use direct and indirect observations, evidence, and data to support claims about genetic reproduction and traits of individuals</td>
</tr>
</tbody>
</table>

**Inquiry Questions:**
1. How are traits passed from one generation to the next?

### Colorado State Standards – Seventh Grade

<table>
<thead>
<tr>
<th>2. Life Science</th>
<th>Concepts and skills students master:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. The human body is composed of atoms, molecules, cells, tissues, organs, and organ systems that have specific functions and interaction</td>
</tr>
</tbody>
</table>

**Inquiry Questions:**
1. How does each body system contribute to supporting the life of the organism?
2. How do organs and organ systems in the human body interact to perform specific functions?
<table>
<thead>
<tr>
<th>Supply</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle wrapping materials</td>
<td>$3.59 a roll (3 rolls)</td>
</tr>
<tr>
<td>Bananas, gloves (box of 100), alcohol wipes</td>
<td>$30.00</td>
</tr>
<tr>
<td>Suture needles (3), thread, forceps (3)</td>
<td>$50.00</td>
</tr>
<tr>
<td>Total</td>
<td>$90.77</td>
</tr>
</tbody>
</table>

*Costs based on workshop with 25 students. Cost/student= $3.63  4 staff recommended*
Appendix 1:

**Chest Pain:**

This is a 42 yr. old female with 3 week history of chest pain.

Medications: Ibuprofen

Allergies: Penicillin

**S (Subjective):**

What does it feel like?

How long does it last?

What makes it feel better?

What makes it feel worse?

Do you feel short of breath?

Any fever?

Other:

**O (Objective):** Vital signs: Temp.= 98.6  BP= 144/84  HR=90  Wt.= 145lbs

Exam:

Throat:

Chest:

Lungs:

Heart:

Other:

Tests:  EKG  Chest X-Ray  Blood tests

**A (Assessment):** Chest Pain due to?

1. Non-cardiac (Acid Reflux, Costochondritis)

2. Cardiac

**P (Plan):** What would you like to do with your patient?

1. Transport to ER in ambulance

2. Treat in your clinic with:
Appendix 2:

**Abdominal Pain:**

This is a 30yr old female with abdominal pain.

Medications: Ibuprofen  
Allergies: None

**S (Subjective):**

Where does it hurt?  
How long has the pain been there?  
What makes it feel better?  
What makes it feel worse?  
Any fever?  
Other:

**O (Objective): Vital signs:**

Exam:
  - Chest:  
  - Abdomen:  
  - Back:  
  - Extremities:  
  - Other:

**Imaging (circle if ordered):**  
CT Scan or Ultrasound of Abdomen and Pelvis

**A (Assessment): Abdominal Pain due to? (Circle your answer)**

1. Appendicitis  
2. Viral Gastroenteritis  
3. Constipation

**P (Plan):** Below write how you would like to treat your patient
Appendix 3:

**Sick Visit:**

4 yr old female with sore throat:

Medications: None    Allergies: None

**(Subjective):**
How long have you been sick?

Symptoms (circle all that apply):
Fever    Chills    Nausea    Diarrhea    Vomiting    Headache
Cough    Nasal Congestion

Other:

**(Objective):** Temp = _____   BP = 98/64   HR = 90   Wt. = 35.2lbs (kg= lbs/2.2)

HEENT –Head:
    Eyes:
    Ears:
    Nose:
    Throat:

Neck:
Lungs:

Rapid Strep test results =

**(Assessment)**
Circle one:   Upper Respiratory Infection    Flu    Strep Throat

**(Plan):**
Prescribe Antibiotics –
    Give Amoxicillin - dose = 50mg/kg/day for 10 days

No Antibiotic

Other recommended treatments:
Appendix 4

How much Amoxicillin will you tell the pharmacist to give your 4yr old patient?

**Amoxicillin liquid choices:**

125mg/5ml
200mg/5ml
250mg/5ml
400mg/5 mL

Instructions to patient: Take _____ ml once per day for 10 days.

Total of _____ ml in the medicine bottle for the entire 10 days.