



Interactive Activity Ideas by Department

<u>Page</u>	<u>Department/Activity</u>
3	Dietary Services Department
4	Surgery Department <ul style="list-style-type: none">I. Laparoscopic surgery activityII. Surgical hand washing activityIII. Applying sterile gloves and removing sterile gloves activityIV. Suturing activityV. Cucumber dissection activity
14	Infectious Disease Department <ul style="list-style-type: none">I. Hand washing activityII. Application of personal protection equipment-PPE-activity-instructions follow
17	Laboratory Department <ul style="list-style-type: none">I. Fecal occult blood testingII. Simulated blood typing activityIII. Preparing slides activityIV. Use of a microscope activity
23	Respiratory Therapy Department <ul style="list-style-type: none">I. Emphysema/COPD activityII. Pulse oximetry activityIII. Breath sounds activityIV. Spirometry activity
29	Physical/Occupational Therapy Department <ul style="list-style-type: none">I. Use of walking devices activityII. Range of motion activityIII. Use of TENS unitIV. Audiology
35	Radiology Department <ul style="list-style-type: none">I. Splinting activityII. Casting activityIII. Electrocardiograph activity



- 39 Nursing & Patient Care Department
 - I. Vital signs activity
 - II. Injection activity
 - III. Glucometer activity
 - IV. Making an occupied bed activity
 - V. Kidney stones and assessing urine output activity

- 46 Emergency Department
 - I. Mock disaster drill activity or triage activity
 - II. Intubation demonstration
 - III. Partial examination of cranial nerves

- 50 Pharmacy Department
 - I. Going to a pharmacy activity
 - II. Make a lip salve/balm activity



Thank you to the Wisconsin Office of Rural Health Club Scrub program for these innovative ideas.



Dietary Services

Materials:

Club Scrub printed cookbooks

Snack supplies

Recipe for students to make the snack

“Make Your Own Healthy Snack”, (see Club Scrub Cookbook at
<http://ruralhealth.und.edu/topics/workforce/scrubs/>)



Surgery

- I. Laparoscopic surgery activity

- II. Surgical hand washing activity

- III. Applying sterile gloves and removing sterile gloves activity

- IV. Suturing activity

- V. Cucumber dissection activity



Laparoscopic Surgery

Materials:

Gowns
Gloves
Masks
Surgical hats
Surgical boots
Laparoscopic equipment
One whole watermelon
Drapes
Balloons

Procedure:

1. Prior to students arriving, take whole watermelon and slice off a small section of the lateral side of the melon so that the melon can lay flat on a surgical table without rolling (simulating a rounded abdomen). Remove the inside of the watermelon making sure to keep the rind intact.
2. Using an awl, instrument, or power screwdriver, drill two holes into the side of the melon (opposite the flat side of the melon) similar to where incisions would be placed for a laparoscopic appendectomy and/or cholecystectomy.
3. Inside the watermelon tack slightly air-filled balloons to represent internal organs, such as the appendix and gall bladder.
4. Place the watermelon on a surgical table.
5. Once students arrive, have student dress in gowns, gloves, masks, hats and boots.
6. Using surgical towels, have student drape the "patient" (watermelon).
7. One student uses the lens to locate the "organ" that is to be removed.
8. Another student inserts the clamp to snip and remove the "organ".
9. Once the organ has been removed, rotate the students.

Note: While four (4) students are performing "laparoscopic surgery", other students can be working with and practicing intubation on a mannequin (see intubation lesson plan).



Surgical Hand Washing

Materials:

Sink with running water
Soap
Orange stick or surgical brush
Sterile towels

**** Can incorporate Glo-Germ Hand Washing Activity into this lesson plan

Basic Hand Washing Procedure:

1. Turn on faucet.
2. Wet hands under warm, running water.
3. Apply soap and rub hands together making sure to cover both palms and back of hands.
4. Weave fingers together and slide back and forth to wash between and scrub between index fingers and thumbs.
5. Rinse hands under clean, running water with fingertips pointing down.
6. Dry hands with a clean towel.
7. Use a clean paper towel to turn off faucet.

Surgical Hand Washing Procedure:

1. Remove any jewelry.
2. Apply Glo-Germ lotion at this time if incorporating into this lesson plan.
3. Turn on faucet with water at a warm temperature.
4. Wet both hands and forearms thoroughly.
5. Using an orange stick or brush, clean or scrub under each fingernail.
6. Keeping hands above the level of the elbow, apply the surgical soap. Start with one hand and begin at the fingertips washing all areas thoroughly, making sure to wash between each finger and thumb. Continue to scrub surface up to the elbow. Repeat on the other hand and arm. Washing should last 3-5 minutes.
7. Rinse one arm at a time, starting at the fingertips and holding the hands above the level of the elbow.
8. Use a sterile towel to dry hands and arms, again working from fingertips to elbow. Use a different side of the towel for each arm.
9. Keep hands above the level the waist, remembering not to touch anything.
10. Begin "Applying Sterile Glove" lesson plan.



Applying Sterile Gloves and Removing Surgical Gloves

Materials:

Package of sterile gloves for each student to fit hand size
Wastepaper basket
Chocolate pudding
Sink with running water
Soap
Paper towels
Black light

Applying Sterile Surgical Gloves Procedure:

1. When applying surgical gloves, remember that the *first glove is picked up by pinching the fold of the cuff.*
2. To prepare make sure to open the outer glove package before scrubbing hands or have a classmate open the package.
3. Open the inner, pleated glove wrapper. Inside are two cuffed gloves which should be laying palm side up.
4. Pick up the first glove by grasping the fold of the cuff with the thumb and index finger of one hand, making sure to touch only the inside portion of the glove.
5. Hold the cuff in one hand and slip the other hand into the glove, making sure that this hand only touches the inside of the glove. If you are unable to get fingers in correctly wait to adjust this until after the second glove has been applied.
6. Pick up the second glove by sliding the fingers of the gloved hand under the cuff of the second glove (sterile area to sterile area).
7. Put the second glove on the ungloved hand by maintaining a steady pull through the cuff. Make sure not to touch your first gloved hand on any surface of skin.
8. Fold down both cuffs by sliding gloved fingers under cuff and pulling down.
9. After both gloves have been applied, adjust the glove fingers to fit properly.



Removing Contaminated Gloves Procedure

1. When removing gloves do not let the outer (dirty) surface come in contact with your skin. Also, do not allow gloves to snap but rather, remove gently.
2. Do not touch any surfaces with gloves on as this will contaminate other surfaces.
3. Before removing gloves, lightly dip gloved hands into a bowl of chocolate pudding to represent bodily fluids.
4. To remove gloves, grasp one of the gloves near the cuff by pinching glove between thumb and index finger (do not touch skin at any time). Pull this glove partway making sure that it is turned inside out.
5. With the first glove still covering the fingers, grasp the second glove near the cuff, again pinching glove between thumb and index finger, making sure not to touch skin. Pull this glove all of the way off, making sure that it is being removed inside out. Continue to hold the glove with the gloved fingertips of the first glove.
6. Using the ungloved hand, grasp the cuffed, clean area of the gloved hand and fold down, drawing the glove inside out over the fingertips and enclosing the glove being held by that hand.
7. Gently drop glove into the garbage.
8. Wash hands immediately after gloves are removed.
9. If Glo-Germ lotion was used at the beginning of this activity, use a black light to assess students' hand washing technique.



Suturing Activity

Resource: Lab Developed by David Holland, STARS Program, University
Of Texas Southwestern Medical Center at Dallas

Healthcare Professionals:

Physician(s)

Physical Assistants

Nurse Practitioners

Materials:

Forceps

Gloves

Scalpel or razor blade

Dissecting pan

Needle holder or hemostat

Suture material (obtain expired materials from Operating Room-OR)

Scissors

Pig's feet

Beginning the Suture

1. Put on your gloves and place the pig's foot in the dissecting pan. Using the scalpel make a single incision through the skin down the length of the pig's foot.
2. Carefully open the package containing the suture material. Clip the needle into the needle holder. The needle should be placed near the end of the jaws of the holder, oriented at a right angle with the concave side up. If you are right handed, the point of the needle should be on the left side of the holder.
3. Make sure that the thumb and 4th finger are inserted into the needle holder only to the first knuckle. Illustrate the correct orientation of the needle in the holder and the correct way to grasp the needle holder.
4. With the forceps, grasp the flap of skin on the right side of the incision. Rotate your wrist so that the pointed end of the needle is at a right angle with the surface of the skin. Aim for a spot about 5 mm to the right of the incision and insert the needle point. With a rotation of the wrist, insert the needle through the skin until the point appears beneath the dermis.
5. Use the forceps to grasp the end of the needle and pull it through the skin until about 3 cm of suture material remains above the skin. Use a rotation of the wrist to be sure you pull along the line of curvature of the needle.
6. Lift the left side of the incision with the forceps and insert the needle up through the skin until the point appears on the surface about 3 mm from the edge of the incision. Use your forceps to pull the needle and suture material out, again along the line of curvature of the needle. Make sure that you leave the short end of the suture in place on the right side of the incision.



Tying the Knot

7. To make an instrument tie, hold the long end of the suture in your left hand and the unlocked needle holder in your right. Place the jaw end of the holder next to the long suture and wrap the suture two times around the holder in a direction away from your body.
8. While maintaining some tension on the line to prevent it from slipping off the holder, open the jaws and grab the short end of the suture. Pull the holder back to the left, through the two loops of the long end. Move the left hand away from you and to the right to tighten the loops. Now you have made the first throw of the knot. Tighten the knot enough to hold the flaps of skin together, but not so tight that it puts undue pressure on the skin.
9. Maintaining tension on the long end of the suture with your left hand, repeat the above procedure, but this time loop the long end back toward you around the holder and only make one loop. Grab the short end again and secure the loop. This will hold the first loop in place.
10. Repeat three more times to completely secure the knot. Trim the excess off close to the knot, leaving about 2 mm of free end.
11. Adjust the knot to the right or left as necessary to insure that the two sides of the incision are level with one another.

Complete the Remaining Sutures

12. Choose a location for your next suture, not too close to the first, nor too far away. About 7 mm is a good distance. Repeat the above procedures to insert the needle to form the stitch and to tie the knot.
13. Repeat until you have placed at least three or four sutures. Then give your lab partners a chance to try their hands.



Cucumber Dissection Lesson Plan

Objective:

1. Students will demonstrate an understanding of the use of anatomical positions in relationship to a 3-dimensional figure

Materials:

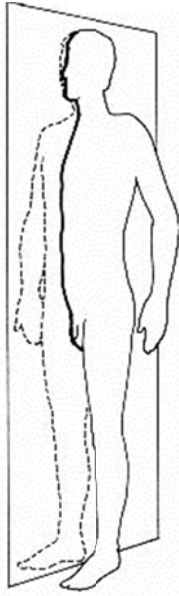
- Cucumber, one per student
- Doll eyes from craft store
- Scalpel
- Dissection trays
- Toothpicks
- Anatomical position definitions

Lesson Plan:

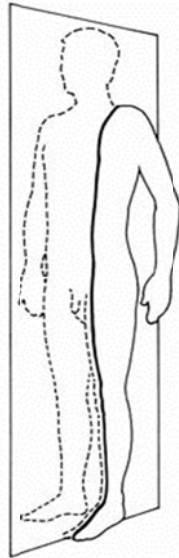
1. Each student will place two eyes on the anterior surface of their “frog”.
2. Students will identify the dorsal and ventral sides of their frog.
3. Students will identify the anterior and posterior parts of the frog.
4. Students will identify superior, inferior and caudal positions.
5. Students will place toothpicks where legs would be located.
6. Students will be directed to make a SHALLOW (superficial) cut starting from the superior end along the anterior side of the frog. The incision should be made to the caudal/inferior end. This is a SAGITTAL INCISION.
7. Next, instruct students to cut midway on the ventral side of the frog from their left lateral to right lateral side. This is a TRANSVERSE INCISION.
8. Introduce the terms “distal” and “proximal”.
9. Instruct students to cut proximally to right upper extremity with a superior to inferior cut, just superior to right lower extremity.
10. Instruct students to make a deep cut on the dorsal aspect of the frog, cutting laterally and inferiorly to the LLE to the caudal end of the frog.
11. Introduce quadrants of the abdomen.
12. Instruct students to make a transverse cut and a sagittal cut on the ventral aspect of the abdominal/pelvic cavity.
13. Instruct students to make a coronal cut, superior to inferior.



<p>Positions</p>	<ol style="list-style-type: none">1. Cranial - toward the head2. Caudal - toward the feet3. Medial - toward the middle4. Lateral - toward/from the side5. Proximal - toward the attachment of a limb6. Distal - toward the finger/toes7. Superior - above8. Inferior - below9. Anterior - toward/from the front10. Posterior - toward/from the back11. Peripheral - toward the surface12. Palmer - toward/on the palm of the hand13. Plantar - toward/on the sole of the foot
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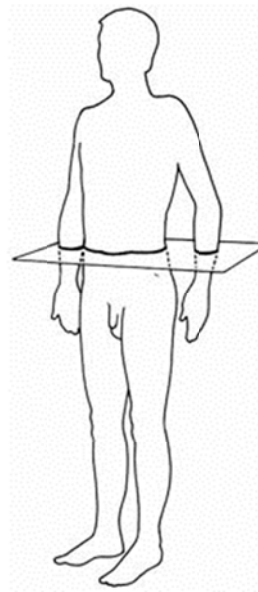
Median or mid-sagittal



Sagittal or paramedian



Coronal or frontal



Transverse or horizontal



Infectious Disease

- I. Hand washing activity

- II. Application of personal protection equipment-PPE-activity-instructions follow
 - A. To order materials go to <http://www.glogerm.com>
 - B. Fun worksheets for students at <http://www.glogerm.com/worksheet.html>



Hand Washing Activity

Resource: <http://www.glogerm.com/>

Materials:

Access to sink with warm water
Soap
Paper towels
Glo-Germ lotion
Black light
Waste container
Hand brush or orange/cuticle stick, if appropriate

Procedure:

1. Assemble equipment.
2. Apply a small amount of Glo-Germ lotion to hands and rub on all surfaces of hands.
3. Turn on faucet using paper towel, setting water temp. to warm.
4. Wet hands with fingertips pointed down.
5. Apply soap.
6. Rub palms of hands together using friction for approximately 10-15 seconds.
7. Rub back of hands.
8. Interlace fingers and rub back and forth.
9. Clean nails using brush or stick.
10. Rinse hands, keeping fingertips pointed down.
11. Use a clean paper towel to dry hands, drying from fingertips to wrist. Discard towel in waste container.
12. Use another dry paper towel to turn off faucet.
13. Use black light to assess hand washing technique.



Proper use of Personal Protective Equipment (PPE)

Materials:

Chocolate pudding

Gloves

Masks

Gowns

Procedure:

1. Each student will obtain a mask, gown and pair of gloves.
2. After proper hand washing, students will apply PPE using proper protocol.
3. Once PPE is applied, students will place gloved hands in pudding.
4. Students will then remove PPE without contaminating self.
5. Students will use proper hand washing following removal of gloves and gown.
6. PPE will be discarded properly.



Laboratory Department

- I. Fecal occult blood testing
- II. Simulated blood typing activity
 - A. Ward's Natural Science: Simulated Blood Typing or "Whodunit" Lab Kit
 - B. <http://www.wardsci.com> type "Blood Typing" into product search
 - C. Cost: \$35.00-38.00
 - D. See lesson plan
- III. Preparing slides activity
- IV. Use of a microscope activity



Fecal Occult Blood Testing

Materials:

Chocolate pudding
Ground beef
Bed pan or hat of stool collection
Gloves
Fecal occult blood test kit
Applicator stick
Reactant

Procedure:

1. Mix one-half of pudding with a small amount of ground beef. Leave one-half of chocolate pudding unmixed (plain).
2. Place both pudding with ground beef and plain pudding in two separate bedpans or toilet hats.
3. Instruct students to obtain two kits, two applicator sticks and two sets of gloves.
4. Students apply gloves. Using one applicator stick, students apply a small amount of fecal material (plain pudding) to one side of the test kit. Using the other side of the applicator stick, students then apply a second sample of fecal material to the other section on the test kit. Students close the test window, open back flap and apply reactant. Students observe for color change indicating if blood is present in fecal material.
5. Students remove gloves and wash hands.
6. Students then reapply a clean pair and test second stool sample following the same procedure, again observing color change when reactant is applied to test kit.



Simulated Blood Typing Activity

TIME NEEDED: approximately one hour

Around 1900 it was discovered that there are at least 4 different kinds of human blood. This is based on the fact that on the surface of the red blood cells there may be one or more proteins, called antigens. These antigens are called A and B. Antibodies are produced in the blood plasma against these A and B antigens, and continue to be produced throughout a person's life.

A person normally produces antibodies against the antigens that are NOT present on his or her red blood cells. For example, a person with antigen A on his red blood cells will produce anti-B antibodies; a person with antigen B will produce anti-A antibodies; a person with neither A or B antigens will produce both anti-A and anti-B antibodies; and a person with both antigens A and B will not produce these antibodies.

The four blood types are known as A, B, AB and O. Blood type O is the most common in the U.S. (45% of the population). Type A is found in 39% of the population. Type B is 12 % of the population, and type AB is found in only 4% of the population.

Because of the different blood types, certain blood groups can only give or receive blood from other specific blood groups:

Blood Cells in Plasma Blood to Blood from

Table with 4 columns: Blood Type, Antigens on Antibodies, Can Give, Can Receive. Rows include A, B, AB, and O blood types and their corresponding antigen/antibody profiles and transfusion compatibility.

If blood cells are mixed with antibodies the cells will clump together. This is called agglutination. This is why it can be very dangerous if you receive the wrong blood type in a transfusion.

Blood typing is performed by mixing a small sample of blood with anti-A or anti-B antibodies (called antiserum), and the presence or absence of clumping is determined for each type of antiserum used. If clumping occurs with only anti-A serum, then the blood type is A. If clumping occurs only with anti-B serum, then the blood type is B. Clumping with both antisera indicates that the blood type is AB. No clumping with either serum indicates that you have blood type O.

Table with 3 columns: Anti-A Serum, Anti-B Serum, Blood Type. Rows show combinations of clumping results (Clumps/No Clumps) and the resulting blood type (A, B, AB, O).



A person’s blood type is inherited from their parents, just like any other genetic trait. Persons with blood type A have inherited one or two copies of the gene for the A antigen, one from each parent. Persons with blood type B have inherited one or two copies of the gene for the B antigen. Persons with blood type AB have inherited one copy of the A antigen from one parent and one copy of the B antigen gene from the other parent. Persons with blood type O inherited neither A nor B genes from their parents.

Blood typing can be used in legal situations involving identification or disputed paternity. In paternity cases a comparison of the blood types of mother, child, and alleged father may be used to exclude a man as the possible parent of a child. For example, a child with the blood type AB whose mother is type A could not have a father whose blood type is A or O. The father must have blood type B.

NOTE: *We are using simulated blood for this activity.*

Materials needed per team of 2 students (use Ward’s simulated blood typing kit)

- 4 blood typing slides
- 8 toothpicks
- 4 unknown “blood” samples (Mr. Smith, Ms. Jones, Mr. Green, Ms. Brown)
- Anti-A and Anti- B antiserums

Procedure:

1. Label each of your 4 slides as follows: Slide #1 Mr. Smith, Slide #2 Ms. Jones, Slide #3 Mr. Green, Slide #4 Ms. Brown.
2. Place 3 drops of Mr. Smith’s blood in the A and B wells of Slide #1.
3. Place 3 drops of Ms. Jones’ blood in the A and B wells of Slide #2.
4. Place 3 drops of Mr. Green’s blood in the A and B wells of Slide #3.
5. Place 3 drops of Ms Brown’s blood in the A and B wells of Slide #4.
6. Add 3 drops of the anti-A serum to each A well of the four slides.
7. Add 3 drops of the anti-B serum to each B well of the four slides.
8. Use **different** toothpicks to stir each sample of serum and blood together. Do the cells in any of the wells clump or not? Record your observations and result in the table below. What are the blood types of each of the 4 samples?

	Anti-A Serum	Anti-B Serum	Blood Type
Slide #1 Mr. Smith			
Slide #2 Ms. Jones			



Slide #3 Mr. Green			
Slide #4 Ms. Brown			

Observations:



Preparing Slides Lesson Plan

Resource: <http://www.col-ed.org/cur/sci/sci06.txt>

Materials:

- Sterile glass slide (6 per group)
- Microscope
- Variety of substances (i.e. egg white, swaps from sinks, swap of check)

Activities:

1. How to Use a Microscope: The teacher will provide the students with microscopes and guide them through an introduction to the following parts from top to bottom:

- Eyepiece 10x
- Body tube
- Revolving nose piece
- Objective lens 4x (low); 10x (medium); 40x (high)
- Stage
- Stage clips
- Carrying arm
- Mirror or light source (lamp)
- Base

2. Setting up a wet mount slide: The teacher explains that a wet mount slide gets its name because it is wet with either stain or water. Stains are used to color parts of cells so they may be seen easily. In order to view something with a microscope a person must be able to see through it. The object must let light through it - this means translucent.

The teacher then demonstrates how to make a wet mount slide. Then the student will advance to prepare their own slides for observation. The teacher may draw a diagram on the board and describe what she will do with the materials.

A wet mount slide includes the following: a slide, a cover slip, a specimen, a drop of stain or water. When preparing a slide, hold the cover slip at an angle and let it drop onto the slide slowly trapping the specimen between the two pieces of glass. A piece of onion skin is easy to use in this first activity.

Procedure:

1. Instruct students on the parts and use of a microscope.
2. To prepare slides, place clean slide on table and place a small drop or swipe of material in middle of slide.
3. Hold second slide at a 30-40 degree angle of first slide and slowly lower over first slide to create a thin film that is free of bubbles.
4. Create at least a total of three slides.
5. Allow slides to dry.
6. Observe each sample under microscope. Record observations, comparing and contrasting observations.



Respiratory Therapy Department

- I. Emphysema/COPD activity
- II. Pulse oximetry activity
- III. Breath sounds activity
- IV. Spirometry activity



Emphysema/COPD Simulation

Resource: <http://school.discovery.com/lessonplans/programs/lungdisease/>

Materials:

Large-holed drinking straws, cut in half
Small-holed straws, “cocktail” straws

Procedure:

1. Each student will be given one-half of a large holed drinking straw.
2. Explain to students that they will be experiencing moderate symptoms of emphysema. Remind students that emphysema can occur at any stage of smoking and is not limited to “long-term” smokers, but includes second-hand smoke, occupational hazards, and asthma.
3. Instruct students to put the large straw in their mouth, hold their nose, and breathe in and out of the straw for 1 minute.
4. Instruct students that if they feel dizzy they can remove the straw.
5. After one minute have the students state how they felt.
6. Next, using the large holed straw, have students walk briskly around the room holding their noses. Again, have students remove straw if they experience dizziness.
7. After one minute have students again state how they felt.
8. Give each student a cocktail straw. Explain to students that they will be experiencing symptoms of severe emphysema.
9. Instruct students to place cocktail straw in their mouths, hold their noses, and breathe in and out for one minute. Have students remove straw if they experience dizziness.
10. Students will state how they felt.
11. Have a presenter–led discussion about the students’ experiences and how this disease affects patients.



Pulse Oximetry Lesson Plan

Materials:

Pulse oximeter

Procedure:

1. Describe that pulse oximetry provides estimates of arterial oxyhemoglobin saturation by utilizing selected wavelengths of light to non-invasively determine the saturation of oxyhemoglobin (SaO₂).
2. Demonstrate how to use a pulse oximeter .
3. Allow each student to apply the pulse oximeter to self to assess their pulse rate and SaO₂ level.
4. Discuss how pulse oximetry is used in the treatment of patients.



Breath Sounds Activity

Resource: Respiratory Examination <http://medinfo.ufl.edu/year1/bcs/clist/resp.html>

Equipment:

Stethoscope
Balloons
1/2" x 6" diameter plastic tube
New disposable sponges
Water

Terms:

Bell

The bell of the stethoscope is the cup shaped part at the end of the tubing, usually opposite to the diaphragm. Not all stethoscopes have a bell. The bell is used to listen to low pitch sounds.

Diaphragm

The diaphragm of the stethoscope is the flat part at the end of the tubing, with the thin plastic "drum-like" covering. The diaphragm is used to listen to high pitched sounds. Some stethoscopes have a diaphragm but no bell.

Tubing

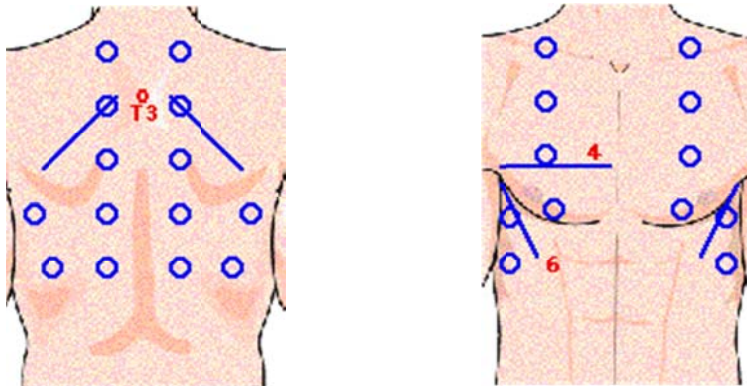
The stethoscope tubing transmits sound from the bell or diaphragm to the earpieces. Some stethoscopes have single tubes, some have double tubes. Double tubes are more sensitive, but may rub against one another causing "squeaks" to be heard.

Earpieces

Earpieces fit into the ears. They should angle slightly forward for the best fit. Earpieces made of soft rubber are more comfortable and may prevent outside sounds from interfering with your listening.

Procedure:

1. Use the diaphragm of the stethoscope to auscultate breath sounds.
2. Listen to your lungs by placing the stethoscope over your chest and breathing in and out deeply and slowly.
3. Move the stethoscope around and compare the noises heard in different areas.
4. Compare the sounds heard using the bell versus the diaphragm. Normal lung sounds should not have any crackles or wheezes in them.
5. Place the stethoscope over your throat and listen to the sounds your trachea makes.



Abnormal lung sounds include crackles and wheezes. If the lung rubs on the chest wall there may be friction rubs.

Crackles sound just like the word sounds. They indicate that there is fluid in the lungs, such as happens with pneumonia or pulmonary edema. Wheezes are high pitched whistling noises, and are heard with some pneumonias and with airway diseases like bronchitis. Friction rubs are squeaky sounds that can be heard with pleuritis (an infection between the lung and the chest wall).

Create a model of the lung:

1. To mimic these sounds, create a model of the lung.
2. Take a balloon and stretch the open end over one end of the tube.
3. Take a sponge and shred it into small pieces.
4. Push the pieces through the tube into the balloon, until the balloon is slightly stretched.
5. Add enough water to moisten the sponge. Squeeze out any excess.
6. Now hold the stethoscope to the balloon and blow in and out on one end of the tube to slightly inflate the balloon. The slight crackly noise you hear is similar to the crackles heard in patients with pneumonia.
7. Wheezes can be simulated by pinching on the neck of the balloon, where it meets the tubing while blowing in and out.
8. Friction rubs can be created by rubbing on the side of the balloon to make it squeak.



Spirometry Laboratory Investigation Lesson Plan

Resource: University of North Texas, Health Science Technology Education

Purpose: Students will identify terms associated with respiratory function by measuring respiratory volumes.

Materials:

- Wet spirometer
- Mouthpieces

Procedure:

1. Use a spirometer to measure and calculate the respiratory volumes and capacities listed below.
2. Record results in data table
3. Repeat twice

Measurement	Volume I	Volume II	Volume III	Average
Tidal Volume				
Inspiratory Reserve Volume				
Expiratory Reserve Volume				
Vital Capacity				
Residual Volume				

Measurement	Average Volume	Description
Tidal Volume	500 ml	Amount of air inhaled or exhaled normally (normal exhalation in spirometer)
Inspiratory Reserve Volume	2100-3100 ml	Amount of air that can be forcefully inhaled after normal inhalation (force air in, breath out normally into spirometer, subtract tidal volume from number)
Expiratory Reserve Volume	1000-1200 ml	Amount of air that can forcefully exhaled after normal exhalation (normal breath, force exhalation into spirometer)
Vital Capacity	4800 ml	Maximum amount of air that can be exhaled after maximum inhalation $VC=TV+IRV+ERV$
Residual Volume	900 ml females 1200 ml males	Amount of air left in lungs after forced exhalation. Use average values.



Physical/Occupational Therapy Department

- I. Use of walking devices activity
- II. Range of motion activity
- III. Use of TENS unit
- IV. Audiology



Walking Devices Lesson Plan

Resource: <http://www.mayoclinic.com>

Materials:

Walker
Cane
Crutches
Wheelchair
Stairs

Procedure:

Walker

1. Check walker for safety
 - Rubber tips on legs should not be hard or cracked
 - All screws should be tight
 - Handgrips should not slide or be cracked
2. Measure walker on your partner
 - Height of the walker should be at the level of the hip (trochanter)
 - When hands grasp the grips, elbow should be bent 30 degrees
3. To walk
 - Pick up the walker
 - Place back legs of walker at level even with toes
 -
 - Walk into walker

Cane

1. Check cane for safety
 - Rubber tips on legs should be firm
 - Cane should not be bent
 - Screws should be tight
 - Grip should be intact
2. Measure cane on partner
 - Cane is held in strong hand
 - Length of cane should be set so when hand is on grip the arm is bent 30 degrees
3. Instruct partner on use
 - Move cane forward first
 - Place cane about 12 inches forward
 - Weak leg is moved first, even with the cane
 - Strong leg moves next and is moved ahead of cane and the weak leg



Crutches

1. Check crutches for safety
 - Tips should be intact
 - Crutches should not be cracked or broken
 - Screws must be tight
 - Arm pads intact and soft
 - Handgrip intact and secure

2. Fitting crutches to partner
 - Have partner stand against the wall
 - Place crutch next to partner's foot, about 6-8 inches
 - The arm pads should be 1 to 1 ½ inches below armpit

3. Instruct partner to use crutches
 - Place both crutches 10-12 inches in front
 - Move weak leg forward to level of crutches
 - Bring strong leg up to meet other leg

Wheelchair

1. Check wheelchair for safety
 - Wheels and pads and intact
 - Brakes functioning properly
 - Footrest functioning properly
 - Screws/bolts intact

2. Use of wheelchair: demonstration by staff member



Range of Motion (ROM) Lesson Plan

Resources: State of WI Promissor Nursing Assistant Procedure Guide
University of Texas, Health Science Technology Education

Procedure: Select a partner

ROM for upper extremity

Head

1. Elevate HOB and remove pillow.
2. Grasp head with both hands either at ears or at crown of head and chin.
3. Move head slowly and without force in flexion, extension and hyperextension.
4. Move head, rotating on axis.
5. Move head laterally, flexing to both sides.

Arm

1. Move joints gently and smoothly to the point of resistance as tolerated.
2. Gently support arm at elbow and wrist.
3. Beginning with arm straight at side, lift arm and extend over shoulder and lower-complete 3 times. Then bend arm 90 degrees and lay flat on bed. Then rotate shoulder 3 times.
4. Beginning with arm straight at side, move straight arm out at a right angle to body, then return straight arm to side. Complete 3 times.
5. Beginning with arm at side, flex elbow and move hand toward shoulder, then straighten. Complete three times.
6. With arm flat on bed, turn hand so palm is up, then turn palm down. Complete 3 times.
7. Support elbow and wrist.
8. With palm up, flex wrist toward shoulder, 3 times.
9. Move hand side to side at wrist toward shoulder, then extend wrist 3 times.
10. Place fingers over partner's fingers and curl partners fingers to form a fist, then straighten 3 times.
11. Touch partner's thumb to each finger three times.

Leg-Hip and Knee

1. Gently support leg at knee and ankle.
2. Begin with leg straight, flex the knee and slowly raise the leg, then straighten the knee and lower the leg 3 times.
3. Begin with leg straight, move straight leg away from center of body, then move straight leg toward center 3 times.
4. With leg straight, turn leg inward, then turn leg outward 3 times.

Ankle and Foot

1. Move forefoot in clockwise circles and counterclockwise circles 3 times.
2. Place fingers over partner's toes and curl toes down, then straighten 3 times.



Use of TENS (Transcutaneous Electrical Nerve Stimulation) Unit

Materials:

Tens Unit
Therapy staff
“Patient”

Procedure:

1. Therapy staff describes TENS unit and its purpose in treating patients.
2. Everyone washes hands.
3. Student volunteers to be “patients”.
4. Staff cleanse the skin with alcohol swap.
5. Staff applies gel to bottom of each electrodes of TENS unit.
6. Staff applies electrodes to student’s arm using tape or patches to hold electrodes in place.
7. Making sure that unit is in OFF mode, insert electrodes into unit.
8. Slowly turn unit to correct setting. “Patient” should feel a tingling sensation.



Audiology Screening

Materials:

Audiologist
Audiologist exam room
Audiologist equipment
Hearing aids
Cochlear implants

Procedure:

1. Arrange a time with audiologist when he/she is available and exam room is not in use.
2. Audiologist explains role and demonstrates a hearing exam and the purpose is changing tones, volumes and conduction issues. Discusses causes of hearing loss.
3. Audiologist shows and demonstrates the function of hearing aids.
4. Audiologist describes cochlear implants.
5. Students rotate through mini-hearing exam performed by audiologist.



Radiology Department

- I. Splinting activity
- II. Casting activity
- III. Electrocardiograph activity



Splinting Activity

Resource: American Red Cross First Aid

Materials:

Splints of various sizes and lengths
Triangular bandages
Gauzes
Ace wraps
Disposable gloves

Procedure:

1. Apply gloves.
2. Immobilize injured part to prevent movement.
3. Use proper splint size to assure that the joint both above and below the injury is immobilized.
4. Use thick dressings to pad the splint.
5. Use ace wraps/gauze to tie/anchor splint in place.
6. Assess circulation of body part distal in injury.
7. Remove gloves.
8. Wash hands.



Casting Activity

Resource: <http://www.castingworkshop.com>

Materials:

Round object for the cast to be applied to (you can use broken off tree limbs with a branch to represent the thumb)

Stockinet
Cast padding
Casting material
Casting buckets with water
Gloves

Procedure:

1. Apply gloves.
2. Place stockinet over "affected" arm.
3. Apply cast padding over stockinet, wrapping in a spiral fashion.
4. Place casting material in bucket of water to wet. Wring out and apply over padding.
5. Starting at fingers, apply an anchor wrap going around "fingers" twice. Fold back stockinet and rewrap to hold stockinet in place.
6. Work distally to proximal, with slight overlap of cast (overlap $\frac{1}{2}$ of previous wrap), removing wrinkles and smoothing as working upward in a spiral fashion, going around "thumb".
7. At top of cast, fold Stockinet over first wrap and go over once to secure in place to make a smooth cast edge.
8. Once cast has dried, students can sign their casted "arm".



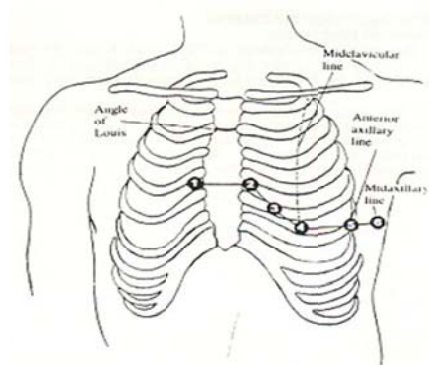
Electrocardiograph Activity

Materials:

Electrocardiograph machine/stress test
Electrodes
Mannequins or adult volunteer

Procedure:

1. Using either mannequin or adult volunteer, radiology staff demonstrate the application and use of electrocardiograph.
2. Staff briefly describe the meaning and use of ECG waves through the use of a sample ECG.
3. Students practice applying electrodes to mannequins.



- V1: In the fourth intercostal space at the right sternal border.
V2: in the fourth intercostal space at the left sternal border.
V3: mid-way between V2 and V4.
V4: in the fifth Intercostal space in the mid-clavicular line.
V5: in the left anterior axillary line at the level of V4.
V6: In the left mid-axillary line at the level of V4.



Nursing & Patient Care Department

- I. Vital signs activity
- II. Injection activity
- III. Glucometer activity
- IV. Making an occupied bed activity
- V. Kidney stones and assessing urine output activity



Vital Signs Activity

Resources: <http://www.madsci.org/experiments/archive/857361537.Bi.html>
http://medinfo.ufl.edu/other/opeta/vital/VS_main.html
<http://www.highbloodpressuremed.com/how-to-take-blood-pressure.html>

Pulse:

Radial Pulse

This is probably what we're most familiar with when visiting the doctor's office. Take two fingers, preferably the 2nd and 3rd finger, and place them in the groove in the wrist that lies beneath the thumb. Move your fingers back and forth gently until you can feel a slight pulsation - this is the pulse of the **radial artery** which delivers blood to the hand. Don't press too hard, or else you'll just feel the blood flowing through your fingers!

Carotid Pulse

The carotid arteries supply blood to the head and neck. You can feel the pulse of the **common carotid artery** by taking the same two finger and running them alongside the outer edge of your trachea (windpipe). This pulse may be easier to find than that of the radial artery. Since the carotid arteries supply a lot of the blood to the brain, it's important not to press on both of them at the same time!

Brachial artery:

1. Flex your biceps muscle.
2. Press your thumb or a few fingers into the groove created between the biceps and other muscles, approximately 5 cm from the armpit. You should be able to feel the pulse of the brachial artery. This is the major artery supplying blood to the arms.
3. Count pulse for 15 seconds and then multiply that number by 4 to obtain your pulse rate.

Respirations:

1. Lay hand on upper abdomen.
2. For one minute count respirations-one rise and one fall of the chest counts as ONE respiration.
3. Number of respirations in one minute is the respiratory rate.

Blood Pressure:

1. Palpate brachial artery.
2. Correctly place cuff on arm (demonstrate). Wrap the correctly sized cuff smoothly and snugly around the upper part of your bare arm. The cuff should fit snugly but there should be enough room for you to slip one fingertip under the cuff. Remember you should not wrap cuff on your shirt; cuff should always be wrapped around your arm skin. Be certain that the bottom edge of the cuff is one inch above the crease of your elbow.
3. Support arm on table at heart level.
4. Put the stethoscope ear pieces into your ears with the ear pieces facing forward.
5. Place the stethoscope disk on the inner side of the crease of your elbow over the brachial artery.
6. Rapidly inflate the cuff by squeezing the rubber bulb to 30 to 40 points higher than your last systolic reading. Inflate the cuff rapidly, not just a little at a time. Inflating the cuff too slowly will cause a false reading.



7. Slightly loosen the valve and slowly let some air out of the cuff. Deflate the cuff by 2 to 3 millimeters per second. If you loosen the valve too much, you won't be able to determine your blood pressure.
8. As you let the air out of the cuff, you will begin to hear your heartbeat. Listen carefully for the first sound. Check the blood pressure reading by looking at the pointer on the dial. This number will be your systolic pressure.
9. Continue to deflate the cuff. Listen to your heartbeat. You will hear your heartbeat stop at some point. Check the reading on the dial. This number is your diastolic pressure.
10. Write down your blood pressure, putting the systolic pressure before the diastolic pressure (for example, 120/80).
11. If you want to repeat the measurement, wait 2 to 3 minutes before re-inflating the cuff.
12. In conclusion, when you take BP, the first sound that appears will show your systolic BP. The BP at which this sound disappears will be your diastolic BP.



Injection Activity

Materials:

Gloves
Oranges
Sterile water
Syringes
Alcohol swabs
Sharps puncture-proof disposal container
Band-aids

Procedure:

1. Wash hands.
2. Apply gloves.
3. Using fresh alcohol pad, cleanse the top of the container of sterile water.
4. Remove cap from syringe and pull back plunger to the 2-3 cc. mark.
5. Push needle into top of sterile water container and inject air into water.
6. Pull back on plunger and draw 2-3 cc. of sterile water into syringe.
7. Replace cap on needle and "medicine" next to orange.
8. Select a site on the skin of an orange. Cleanse the area (about 2 inches) with a fresh alcohol pad.
9. Wait for site to dry.
10. Remove the needle cap.
11. Hold the syringe the way you would a pencil or dart. Insert the needle at a 45 to 90 degree angle to the "skin". The needle should be completely covered by "skin".
12. Hold the syringe with one hand (non-dominant). With the other hand pull back the plunger to check for "blood". If you would see "blood" in the solution in the syringe of a patient you would NOT inject. You would withdraw the needle and start again at a new site.
13. If you do not see blood (today's activity) slowly push the plunger to inject the medication. Press the plunger all the way down.
14. Remove the needle from the skin and gently hold an alcohol pad on the injection site. Do not rub.
15. **DO NOT RECAP THE NEEDLE. IMMEDIATELY PUT THE SYRINGE AND NEEDLE IN THE DISPOSAL CONTAINER.**
16. Apply a bandage.



Glucometer Activity

Resources: <http://www.fda.gov/diabetes/glucose.html#6>
<http://www.brainpop.com/health/diseasesandconditions/bloodglucosemeter/>
(great site for students to view demonstration)

Materials:

Adult volunteer

Gloves

Blood glucose meter — reads blood sugar

Test strips— collects blood sample

Lancet — fits into lancing device, pricks finger, and provides small drop of blood for glucose strip

Lancing device— pricks finger when button is pressed

Alcohol wipes— to clean fingers or other testing site

Control solution — checks test strip for accuracy

Procedure: the following are the general instructions for using a glucose meter

1. Wash hands with soap and warm water and dry completely or clean the area with alcohol and dry completely.
2. Prick the fingertip with a lancet.
3. Hold the hand down and hold the finger until a small drop of blood appears; catch the blood with the test strip.
4. Follow the instructions for inserting the test strip and using the meter.
5. Record the test result.



Making an Occupied Bed

Materials:

Linens-bottom sheet, top sheet, blanket, spread, draw sheet (if needed), pillow cases

Hospital bed

“Patient”

Laundry hamper

1. Place linens and hamper near the side of the bed you will begin on.
2. Raise both side rails.
3. Raise bed to appropriate working height.
4. Untuck top linens. Have patient grasp top sheet and hold in place while removing the dirty blanket and spread. Place in hamper. Remember to keep “patient” covered with top sheet.
5. Move patient’s pillow to opposite side of bed from where you will begin.
6. Assist patient in rolling to opposite side, using side rail to assist the patient in maintaining this position.
7. Lower side rail on working side of bed.
8. Roll the empty side of the dirty bottom sheet/draw sheet lengthwise along the backside of the patient’s body so that one- half of the bed has the mattress exposed.
9. Unfold (do not shake) the clean bottom sheet (fitted sheet) lengthwise along the exposed part of the bed, making sure that the center seam is in the middle of the bed. Place fitted sheet over both corners and tuck remaining sheet under the dirty, lengthwise linens. Add draw sheet and tuck in, if needed.
10. Move patient’s pillow to clean side of bed and assist the patient in rolling toward you, reminding the patient that he/she will be rolling over the linens.
11. Raise the side rail and have patient hold on to this to maintain their position.
12. Go to other side of bed. Lower side rail.
13. Remove dirty bottom sheets and place in hamper.
14. Pull through clean sheets and place fitted sheet firmly over corners, making sure to remove all wrinkles. Tuck in draw sheet, if used.
15. Assist patient in rolling to his/her back.
16. On the patient place clean top sheet over dirty top sheet, allowing enough fabric to adequately tuck sheet in at the bottom while leaving 4-6 inches on top to fold over.
17. While the patient is holding the top edge of the clean top sheet, gently slide the dirty sheet off of patient, starting at top and working down. Place in hamper.
18. Unfold clean blanket and spread over patient. Raise side rail.
19. Tuck in top linens at bottom of bed, using mitered corners and allowing for space for foot movement.
20. Fold over top edge of sheet to cover blanket and spread.
21. Gently remove patient’s pillow and remove pillow case. Place case in hamper.
22. Apply clean case and replace pillow behind patient’s head.
23. Lower bed and place call signal within patient’s reach.



Kidney Stones and Assessing Urine Output

Materials:

Small pebbles
Water
Yellow food dye
Gloves
Urine hat
Graduated cylinder
Kidney stone strainer
Specimen cup

Procedure:

1. Collect a number of small pebbles of different sizes to represent kidney stones.
2. Mix together water with yellow food dye in a urine collection hat to represent urine.
3. Place one or two very small pebbles in the urine hat.
4. Students obtain a specimen cup and label with patient's name.
5. Students wash hands and apply gloves.
6. Students pour urine from hat into graduated cylinder and measure amount of urine in hat. Remind students to remember this amount so that they record this amount after completing the procedure.
7. After amount is noted, student strains the urine through a kidney stone strainer, observing for stones.
8. After stone found, student places it in a specimen cup and seals to send to lab for analysis.
9. Student removes gloves and washes hands.
10. Student records urine output on I&O sheet.



Emergency Department

- I. Mock disaster drill activity or triage activity
- II. Intubation demonstration
- III. Partial examination of cranial nerves



Disaster Drill/Triage Activity

Materials:

Disaster scenario

Make-up and/or disaster kit from local county emergency department

ER and ambulance staff to assist with triage, if possible

Procedure:

1. Develop a disaster scenario in which each student receives injuries of varying degrees, ranging from minor to critical. Examples of disasters are bus roll-over, fertilizer contamination, science lab explosion.
2. Students receive cards that identify injuries. Cards are placed on students stating types of injuries they have experienced.
3. After dressed and make-up applied, students are placed at ambulance entrance as if they have been transported to hospital. They are identified and receive wrist bands from staff.
4. ER staff triage students based on degree of injury and where they will be sent (OR, X-ray, contamination room).
5. Students are treated as patients and mock procedures are performed.



Intubation Activity

Resources: <http://www.healthsystem.virginia.edu/Internet/Anesthesiology-Elective/airway/Intubation.cfm>

Materials:

Mannequin
Intubation tray
Stethoscope

Procedure:

1. Request anesthesiologist or nurse anesthetist to demonstrate intubation using a mannequin.
2. May demonstrate intubation procedure prior to surgery.
3. Allow students to practice intubating a “patient.”



Partial Neurologic Examination of Cranial Nerves

Materials:

Tuning fork
Otoscope
Small flashlight
Reflex hammer

Procedure:

1. Visual acuity: Complete Snellen eye chart at 14 feet.
2. Pupillary reactions: Instruct “patient” to fix both eyes forward on an object. Examiner quickly shines the beam of a light directly into each pupil, one at a time. Note the constriction when the light is flashed into pupil and its return to normal size when removed.
3. Ocular movement: Instruct the “patient” to follow examiner’s fingers without moving their head. Examiner moves his/her fingers up, down, left and right observing equal movement of eye.
4. Facial motor function testing: Examiner has “patient” wrinkle forehead, smile and wink eyes noting any asymmetry in movement.
5. Hearing: Using a tuning fork, examiner tests “patient’s” hearing.
6. Tongue function: Examiner instructs patient to open mouth and say “ahh” and protrude tongue.
7. Neck and shoulder strength: Examiner instructs “patient” to raise both shoulders while examiner gently pushes down on shoulders. Examiner instructs patient to turn head to left and right.
8. Sensory: Examiner instructs patient to close eyes. Examiner lightly touches patient on all 4 limbs and asks patient to identify location.
9. Balance: Patient stands with feet together and eyes closed while examiner assesses balance. Patient asked to touch his/her nose and then the examiner’s finger. Patient asked to stand on one foot and balance.
10. Reflexes: After demonstrating how to *gently* test knee reflex using reflex hammer have examiner test knee reflex on patient.



Pharmacy Department

- I. Going to a pharmacy activity
- II. Make a lip salve/balm activity



Going to a Pharmacy Activity

Materials:

Note cards with the name of a different drug on each card that is written up as a prescription, one per student

Resource books regarding medications: nursing pharmacology reference, PDR

Small candies (M&Ms, smarties)

Pill bottles

Blank labels

Procedure:

1. Break students into groups of 2-3.
2. Distribute a note card to each student.
3. One student acts as a customer/patient and the other student is the pharmacist.
4. Customer/patient asks the pharmacist, who then uses the reference book(s) to answer the following questions:
 - What is my medicine for?
 - How does my medicine work?
 - How much and how often should I use my medicine?
 - How should I take my medicine?
 - How long should I use my medicine?
 - Can there be some side-effects when using my medicine?
 - Where can I get help if I have problems?
5. "Pharmacist" then counts out prescribed number of "pills" (candy), labels bottle accurately and answers all patient questions.



Make a Lip Salve/Balm Activity

Materials:

- 1 oz. Beeswax
- 1 oz. Shea butter or mango butter
- 1 oz. Cocoa butter or deodorized cocoa butter
- Essential oil (approximately 10 drops or flavor to suit)
- 1 oz. Sweet almond oil
- Lip tubes, jars or tins (can be obtained at a craft store)

Procedure:

1. Melt beeswax, cocoa butter and sweet almond oil in microwave on defrost power, using intervals of one minute to stir. You can also use a saucepan on really low heat (using a double boiler is even better).
2. When completely melted, add essential oil of your choice (try peppermint, spearmint or any citrus flavors) and shea butter or mango butter.
3. Combine thoroughly.
4. Carefully pour into tubes, jars or tins.
5. Allow to cool completely.