GRUP D'EXPERIMENTACIÓ PER AL PLURILINGÜISME

TÍTOL: "BLOOD SAMPLING"

Àrea: CFGS Laboratori Clínic i Biomèdic/MP1: Gestió de mostres biològiques (Health Care Vocational training: *Laboratory Technician)*

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Generalitat de Catalunya
Departament d'Ensenyament

MARC PER AL PLURILINGÜISME
A FAVOR DE L'ÈXIT ESCOLAR
PLURILINGÜISME

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"BLOOD SAMPLING"

Material elaborat durant la realització de la formació adreçada als docents que implementen el pilotatge del GEP (Grup d'Experimentació per al Plurilingüisme) durant el curs 2015-2016, realitzada amb la formadora del OUP (Oxford University Press)

SG de Llengua i Plurilingüisme
Servei de Llengües Estrangeres

Gener, 2016

Ten tips for learning success

- Use of different resources: video, phlebotomy laboratory material, camera/mobile phone camera in order to contemplate student diversity
- Choose the proper equipment needed to perform the venipuncture process
- Name the tools to draw blood
- List and differentiate the different phlebotomy techniques shown in the video
- Sort out the essential steps that are part of every successful phlebotomy procedure
- Describe common complications after phlebotomy
- Design a poster in order to improve the safety of phlebotomy for health workers and patients
- Follow the instructions to perform venipuncture
- Practice phlebotomy techniques using a training model (Ambu® I.V. Trainer)
- Identify the main components of blood
- Recognize and talk about the main reasons to get a blood test
- Understand and use clinical laboratory technician vocabulary (phlebotomy/blood)
- Follow and catch the main ideas of a scientific video

Títol del text

"How to draw blood with three different phlebotomy techniques"

http://mediasite.cidde.pitt.edu/Mediasite/Play/62de73791194446c8051faca4ca17ed8

Activities

Before watching the video, look at the images below and come to a consensus in your group.... ***What do you think the video is about?***

It's a video about....

This video is about...

The following video shows how to...







Explicit

- 1. List the phlebotomy medical procedures shown in the video.

  a. .....
  b. .....
  c. .....

- 2. What is the best angle to use for needle insertion during routine venipuncture?

  a. 13 Degrees b. 53 Degrees c. 30 Degrees

- 3. Equipment: Work with a partner to take some pictures from the phlebotomy laboratory material, insert them in the table below, and label them with the words from the box.

Alcohol wipes *Straight needle* *Tourniquet* *Butterfly needle* *4x4's (gauze)* *Vacutainer* *Tape* *Gloves* *Blood collection tubes* *syringe*

STUDENTS PICTURE	MATERIAL NAME

Implicit

- 4. Summarize, in a logical order, the essential steps required to draw blood safely and effectively

- 5. Assess the importance of disposing needles, syringes and vacutainers properly.

Referential

- 6. Discuss that question with a partner:

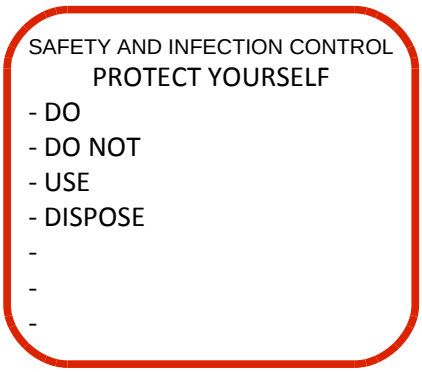
"Which of the different phlebotomy techniques learned, is the most appropriate for blood drawing on paediatric patients?" Argue your answer.

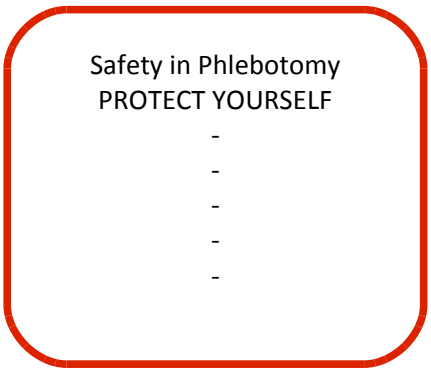
You can use the following structures:

- *In my opinion…*
- *As far as I am concerned...*
- *From my point of view...*
- *My view / opinion / belief / impression / conviction is that...*
- *I think / consider / find / feel / believe / suppose / presume / assume that ...*

- 7. SAFETY AND INFECTION CONTROL: Because of contacts with sick patients and their specimens, it is important to follow safety and infection control procedures. Elaborate a poster including the main precautions that should be taken in order to protect yourself when performing venipuncture. You can use a free online poster maker.

  These models can help you to make it!!!





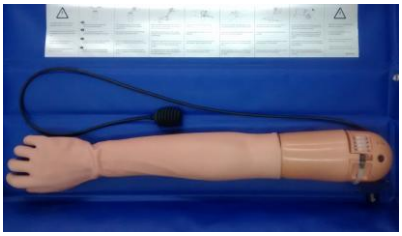
- 8. Lab Lesson: PERFORMING A VENIPUNCTURE

Let's put into practice everything you've learnt about venipuncture...Are you ready?

- In small groups students will practice phlebotomy techniques using a training model (Ambu® I.V. Trainer)
- Each group will use a different blood collection system: butterfly needle + syringe; butterfly needle + vacutainer; straight needle + vacutainer straight needle + syringe
- As part of the lesson, learners can record a video of their performance

Directions:

1. Prepare the Ambu® I.V Trainer (instructions are on the carry case)



2. Select the appropriate materials
3. Perform the venipuncture and narrate it to the members of your group.

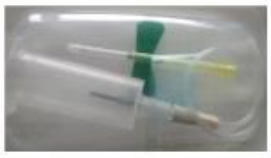
Revision

- 9. Label the equipment needed for the phlebotomy procedure using the words below.

Kidney dish	*Alcohol wipes*	*Syringe*	*Gloves*
Straight needle	*Tourniquet*	*Gauze*	*Blood collection tubes*
Butterfly needle	*Vacutainer (Hub)*	*Povidone-iodine Prep Pad*	

- 10. Identify and match the blood-sampling systems shown in the video with the following pictures.

Butterfly needle + syringe



Butterfly needle + vacutainer

Straight needle + vacutainer

- 11. Work with a partner to put these images in a logical order (1-10).



_____ _____ _____



_____ _____ _____



_____ _____ _____

_____

- 12. Match the previous images (1-10) with the straight needle and Vacutainer technique instructions.

	Dispose your needle and vacutainer into a puncture-resistant container
	Apply a tourniquet
	Prepare material
	Remove needle and apply safety cover
	Identify potential veins (preferably at the antecubital area)
	Use clean straight needle and vacutainer and perform venipuncture (take blood)
	Remove tourniquet
	Assemble equipment
	Ask the patient to form a fist
	Disinfect the entry site

Extension

- 13. A variety of adverse complications may be encountered during the blood collection process. Complications that can arise from venipuncture include:

- *Haematoma formation*
- *Petechiae*
- *Edema*
- *Thrombus*

Research one of the complications associated with phlebotomy. Describe in writing what it is and why it occurs (common causes) and prepare a short talk for your next lesson, using visual aids if appropriate (PowerPoint)

These essay structures can help you!!!

- *This type of complication is caused by/can result from/occurs when …..*
- *This type of complication occurs when ….....*
- *This may be due to …..*

Project: collaborative problem solving

Is there a relationship between Clinical Laboratory Technicians and Detectives?

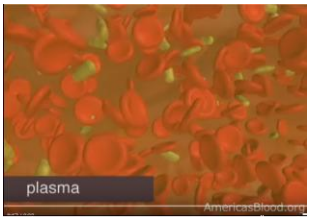
What is blood made of?

Watch the video. https://www.youtube.com/watch?v=CRh_dAzXuoU 2:23 min

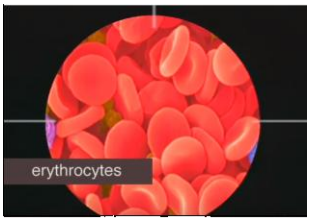
Key words:

plasma	*proteins*	*hormones*	*erythrocytes*	*leukocytes*	*platelets*	*thrombocytes*
bone marrow	*disease*	*granulocyte*	*plug*	*vessel*	*wound*	*bleeding*	*clot*

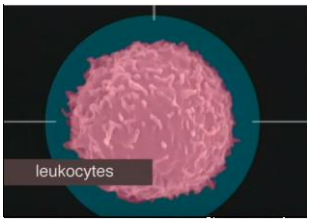
Sequence: Work in pairs. Watch the video once. Then I will give you a set of cards with phrases and pictures from it. Watch the video again and display the cards in the order you believe is correct (same order that appear in the video). Check it with another group.



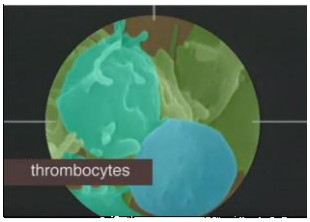
Blood is actually mixed cells suspended in a slightly yellowish liquid called **plasma**. Plasma is made of mostly **water** but it also contains **proteins**, **sugars**, **hormones** and **salts**.



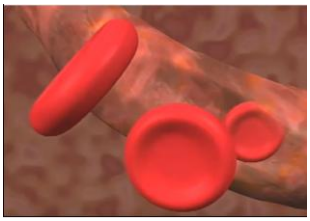
The three different types of cells you'll find in plasma are red **blood cells or erythrocytes** ...



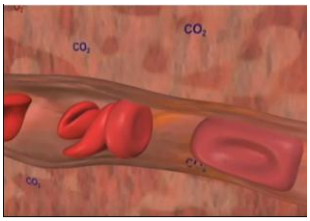
White blood cells or leukocytes ...



and **platelets or thrombocytes**

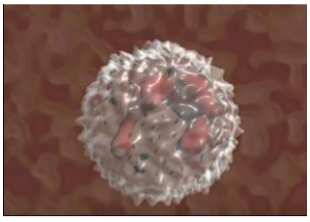


Red blood cells give the **bloodish colour** and make up forty to forty-five percent of your blood. They're round and look a little like a donut without a hole in it

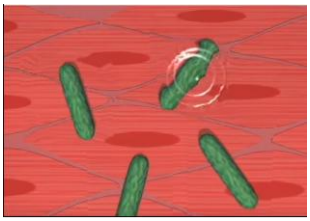
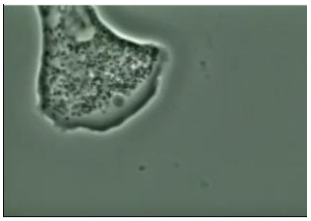
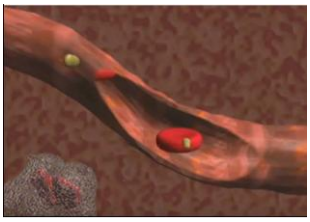
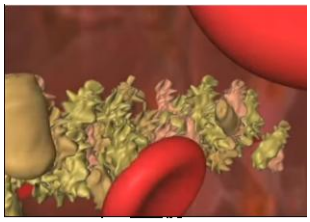
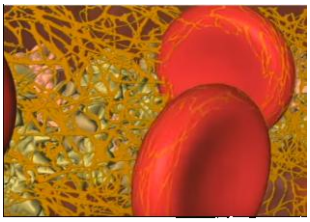
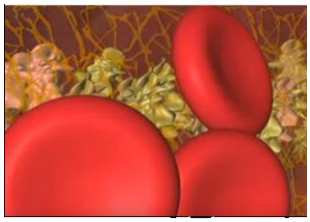


Their main job is to **carry oxygen** to the other cells in the body and to **take away the carbon dioxide** as a waste product

Red blood cells only live for months but healthy **bone marrow** produces 4.5 billion red cells every hour, to keep replenishing the ones that were out



White blood cells on the other hand are the **body's defences**. They all fight infection from bacteria, viruses all those nasty microbes that can cause disease

 Whenever germs begin to infect your body they send out a signal that the **granulocyte** recognizes. Just as soon as the granulocyte detects the signal, it begins its journey to the site of the infection	 When at last they find the **invader germ** they quickly move in for the kill first attacking invader and they eat it
 **Platelets** are small pieces of cell material or cytoplasm whose job it is to **plug holes** in the vessel walls	 So say you're staying inside the blood vessel you'll see millions of platelets responding to the injury throwing themselves through the cut. They stick in the wound edges and into each other to form a **plug** that slow the loss of blood within three to five minutes
 A platelet plug lasts for only 24 to 72 hours because the platelets run out of energy and begin to fall apart	 When the wall is completely healed by the new cells growing over it, the clot will be cleared away

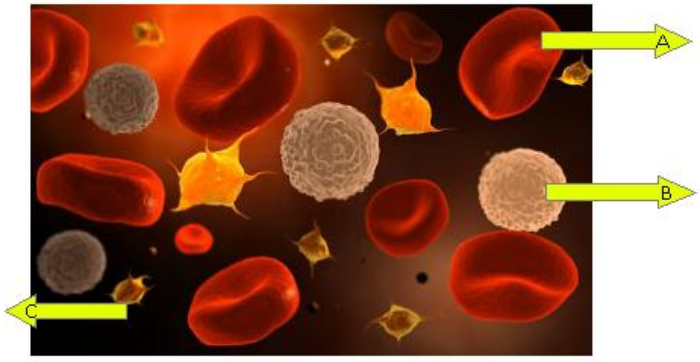
Next do the following activities. If you need help, you can view the video as many times as you like.

- Identify each type of blood cell in the picture bellow.

____Red blood cells (RBC)

____Platelets (PLT)

____White blood cells (WBC)



- Complete the text using the words below.

Liquid	*red*	*prevent*	*leukocytes*	*immune*
Pathogens	*hormones*		*haemoglobin*	*proteins*
oxygen	*platelets*	*abundant*	*blood*	*nutrients*

…..... BLOOD CELLS (Erythrocytes) – The most …..... cells in our blood; they are produced in the bone marrow and contain a protein called …..... that carries …..... to our cells.

WHITE BLOOD CELLS (…......) – They are part of the …..... system and destroy infectious agents called …..... .

PLASMA – This is the yellowish …..... portion of blood that contains electrolytes, …..... and vitamins, …..... , clotting factors, and …..... such as antibodies to fight infection.

…..... (Thrombocytes) – The clotting factors that are carried in the plasma; they clot together in a process called coagulation to seal a wound and …..... a loss of …..... .

Venipuncture or Phlebotomy is a procedure that removes blood from the body, usually for..... ???

- Laboratory testing (clinical management and health assessment)

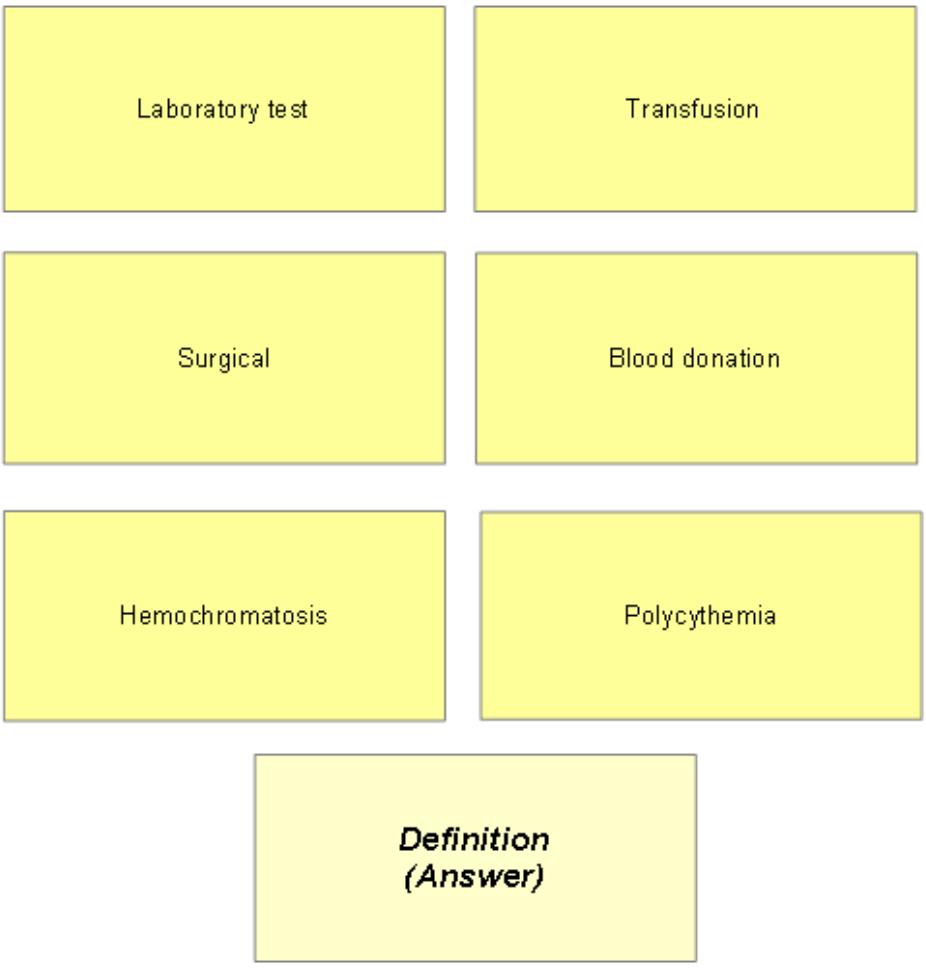
- Blood donation

- Surgical purposes

- Therapeutic purposes; it's used as a treatment for medical conditions when there is too much iron or red blood cells in the body

- Cross-matching in transfusion medicine

- Make a double-sided flash card for Venipuncture. I'll give you a card front (question) and you have to find and write the answer/definition in the back side. Use them to test yourself and your classmates.



BLOOD TESTS:

What can blood tests reveal?

A **blood test** is a laboratory examination of a sample of blood used to obtain information about its physical and chemical properties. Blood analysis is commonly carried out on a sample of blood drawn from the vein of the arm, the finger, or the earlobe; in some cases, the blood cells of the bone marrow may also be examined. After the blood sample has been taken, it will then be sent to a laboratory where it will be examined under a microscope or tested with chemicals, depending on what's being checked. Hundreds of haematological tests and procedures have been developed, and many can be carried out simultaneously on one sample of blood with such instruments as autoanalyzers.

- **Running dictation**: Reasons than blood tests are done

Groups: Students work in pairs or threes. One person is the designated writer. The other partner is the runner. They can only read and speak. (In groups of three, the two non-writers take turns being the runner)

Action: When time starts, one runner from each group "runs" to the front and memorizes as much text as possible. He/she then returns to the writer and reports what was read. The writer writes. This continues until the text is complete.

Rules: The students should try to reproduce the text exactly. The first group to finish with a correct text is the winner.

Review: After everyone finishes, pass out copies of the text. Student can check their work, note the target grammar structure, and do a follow-up activity.

Running dictation

Reasons than blood tests are done

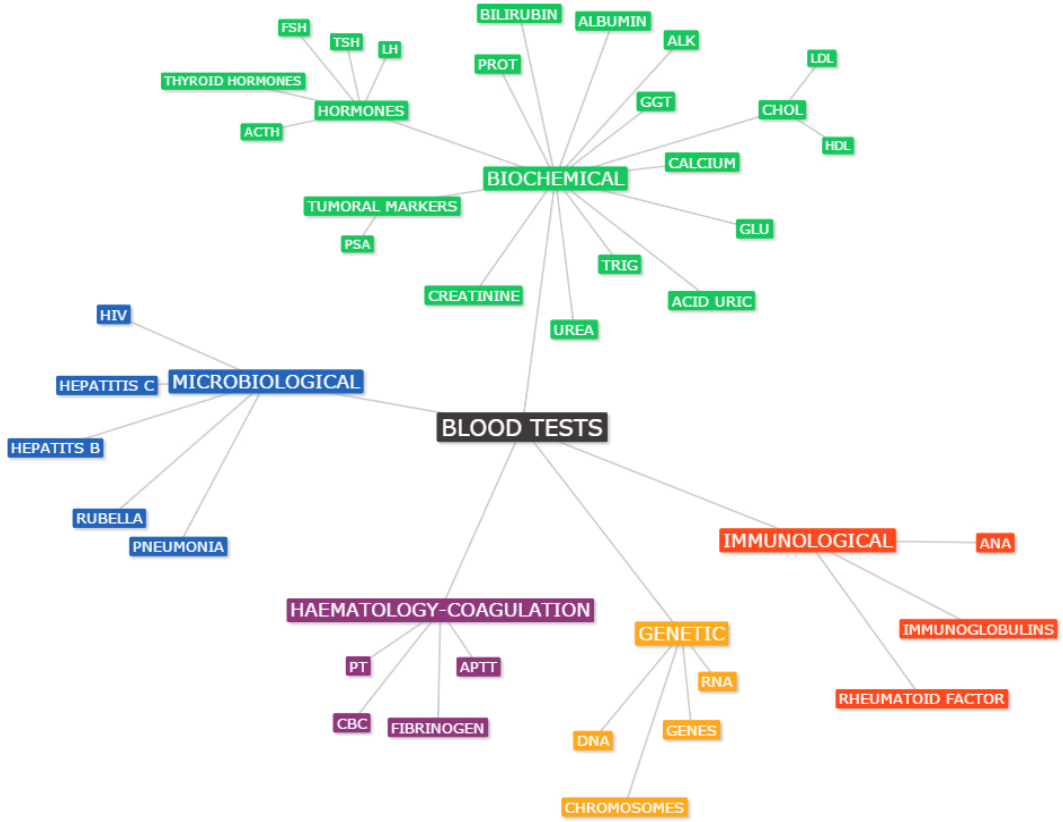
There are a multitude of reasons for a blood sample to be taken and for the subsequent tests to be run:

- Evaluate how well organs are working
- Validate, or not, the suspicion of a pregnancy or a Sexually Transmitted Disease (STD)
- Early detection of many diseases and conditions such as cancer, HIV/AIDS, diabetes, anaemia and coronary heart disease
- Check whether medicines you're taking are working
- Assess how well your blood is clotting
- Establish if someone is the biological parent of a child
- Identify suspects or victims in a criminal investigation
- Test parents or foetuses for genetic conditions or birth defects
- Determine the blood group
- Anti-doping test

- Link each verb on the left with a noun on the right to make 'partnerships'. Notice that some verbs can link with more than one noun.

VERBS	***NOUNS***
1. DETECT	A BLOOD SAMPLE
2. ANALYSE	A DISEASE
3. TAKE	INFORMATION
4. IDENTIFY	A PROCEDURE
5. DEVELOP	A SAMPLE
6. DIAGNOSE	A SUSPICION
7. VALIDATE	BLOOD
8. DRAW	A VICTIM
9. OBTAIN	A DISEASE
10. EXAMINATE	BLOOD CELLS

A **MIND MAP** is a diagram used to visually organize information. This mind map is based on blood tests.



- Test your tech abbreviations that appear in the mind map. What do the following stand for? Check the ones you don't know in the dictionary. The first one has been done for you as an example.

✓ *HIV: Human Immunodeficiency Virus (HIV)*
✓ *PROT:*
✓ *ALK:*
✓ *GGT:*
✓ *GLU:*
✓ *CHOL:*
✓ *HDL:*
✓ *LDL:*
✓ *TRIG:*
✓ *TSH:*
✓ *FSH:*
✓ *LH:*
✓ *ACTH:*
✓ *PSA:*
✓ *ANA:*
✓ *DNA:*
✓ *RNA:*
✓ *CBC:*
✓ *PT:*
✓ *APTT:*

Assessment

Criteria	Needs improvement 1 pts	Fair 2 pts	Good Work 3 pts	Excellent Work 4 pts
Student is able to understand and use clinical laboratory technician vocabulary (phlebotomy/blood)	Student did not understand enough vocabulary or information to complete the tasks	While the student did not understand a lot of the vocabulary and information he/she was able to complete some of the tasks	The student showed a good general understanding f the vocabulary and information, with most tasks completed	Te student showed a very good general understanding of all vocabulary and information completing all tasks
Student is able to follow and catch the main ideas of a scientific video	The student was not able to concentrate on the video and was easily distracted and inattentive	The student found it difficult to concentrate on the video, but was able to attend occasionally	The student as mostly attentive and usually able to watch and listen with good concentration	The student was able to concentrate fully and watch and listen very attentively through the assessment
Student is able to follow the instructions to perform venipuncture	Student unable to perform venipuncture procedure on adults	Student performs venipuncture with more than 4 errors (equipment selection, order of draw for multiple tube phlebotomy , patient care following completion of venipuncture, safety and infection control procedures)	Student performs task with more than 2 errors	Student performs a safety venipuncture process with no errors
Student is able to design and create a poster in order to improve the safety of phlebotomy for health workers and patients	*Topic Content Knowledge:* In the poster there are many gaps in information presented. Confusing. *Creativity:* Lacks original creativity Not good use of space on poster. Messy. Lacks colour, texture	*Topic Content Knowledge:* There is not enough information presented. Information is presented in an unorganized way and may be hard to *Creativity:* Not very appealing. Limited use of creative materials. Not a lot of colour/shapes/design	*Topic Content Knowledge:* Poster includes all relevant information; however, it is not well-organized or easily understood. *Creativity:* Contains students own ideas. Lots of colours, shapes, and appealing design.	*Topic Content Knowledge:* The poster includes all information relevant to the topic. The poster is creative, clear and concise. The student had all the information that was taught in class or required for assignment. *Creativity:* Eye catching. Great use of colours, shapes, and spacing on poster. Writing is easy to read

Criteria	Needs improvement 1 pts	Fair 2 pts	Good Work 3 pts	Excellent Work 4 pts
Student is able to express and argue an opinion about the most appropriate technique for blood drawing on paediatric patients	The student gives a list of single, undeveloped ideas, with an attempt to state an opinion	The student uses information in an effort to state a clear opinion	The student states an opinion and develops a supporting argument logically without lapses in sequence	The student states a solid opinion and develops a well reasoned and sequential argument. Ideas are presented in a very persuasive manner
Student is able to reach information about common complications after phlebotomy and present it in front of the class	Topic is addressed but not discussed or elaborated on. The information does not consistently support images. Student does not present in a loud or clear voice and reads simply from the presentation.	Topic is slightly discussed but more material is needed. Information supports images at times. Student presents in a voice that is sometimes clear but constantly refers to the presentation.	Topic is somewhat discussed but more information is required. Information adequately supports images. Student presents in a loud, clear voice but turns to the screen occasionally.	Topic is discussed clearly and in an organized manner. Information is at the advanced level and consistently supports images. Student presents in a loud, clear voice and does not read from screen.

Checklist

In this unit you have…

- Name the tools to draw blood.
- List and differentiate the different phlebotomy techniques shown in the video
- Sort out the essential steps that are part of every successful phlebotomy procedure
- Describe common complications after phlebotomy
- Follow the instructions to perform venipuncture
- List the three kinds of blood cells
- State the principle functions of blood cells
- Recognize and talk about the main reasons to get a blood test
- Understand and use phlebotomy vocabulary
- Follow and catch the main ideas of a scientific video

STUDENT SELF-ASSESSMENT CHECKLIST

BLOOD-SAMPLING

Student Name: …..... Date: …....

Please select YES or No for each of the statements.

ASSESSMENT QUESTIONS ***I'm able to.....***	***YES***	***NO***	***COMMENTS***
Name the tools to draw blood			
List and differentiate the different phlebotomy techniques shown in the video			
Sort out the essential steps that are part of every successful phlebotomy procedure			
Describe common complications after phlebotomy			
Follow the instructions to perform venipuncture			
List the three kinds of blood cells			
State the principle functions of blood cells			
Recognize and talk about the main reasons to get a blood test			
Understand and use phlebotomy vocabulary			
Follow and catch the main ideas of a scientific video			