



Lab 1: Laboratory Safety & Sample Collection

450 MIC

PRACTICAL PART
SECTION (30397)



Grading and Dates

GRADE DISTRIBUTION

Assignment (5 Marks): Choose 2 ways (serological, molecular based) used for the diagnosis of a certain virus infecting human?



27-05-1439 AH

Research (5 Marks): You will be provide with a type of viruses infecting human and apply what you study on it.



25-06-1439 AH

Summarizing (5 Marks): Summarize the types of viral infection along with their diagnosis techniques?



17-07-1439 AH

Final Exam: 15 Marks.



01-08-1439 AH

Laboratory Safety

- ❑ It is important to remember that whenever one works with an infectious agent there is the possibility of infection to oneself or to others by **negligence**
- ❑ Furthermore, organisms that are referred to as "nonpathogenic" are still potential pathogens
 - ❖ For example, certain "non-human" viruses, such as Newcastle disease virus (NDV), have been known to cause conjunctivitis when inadvertently introduced into the human eye.





Laboratory Safety

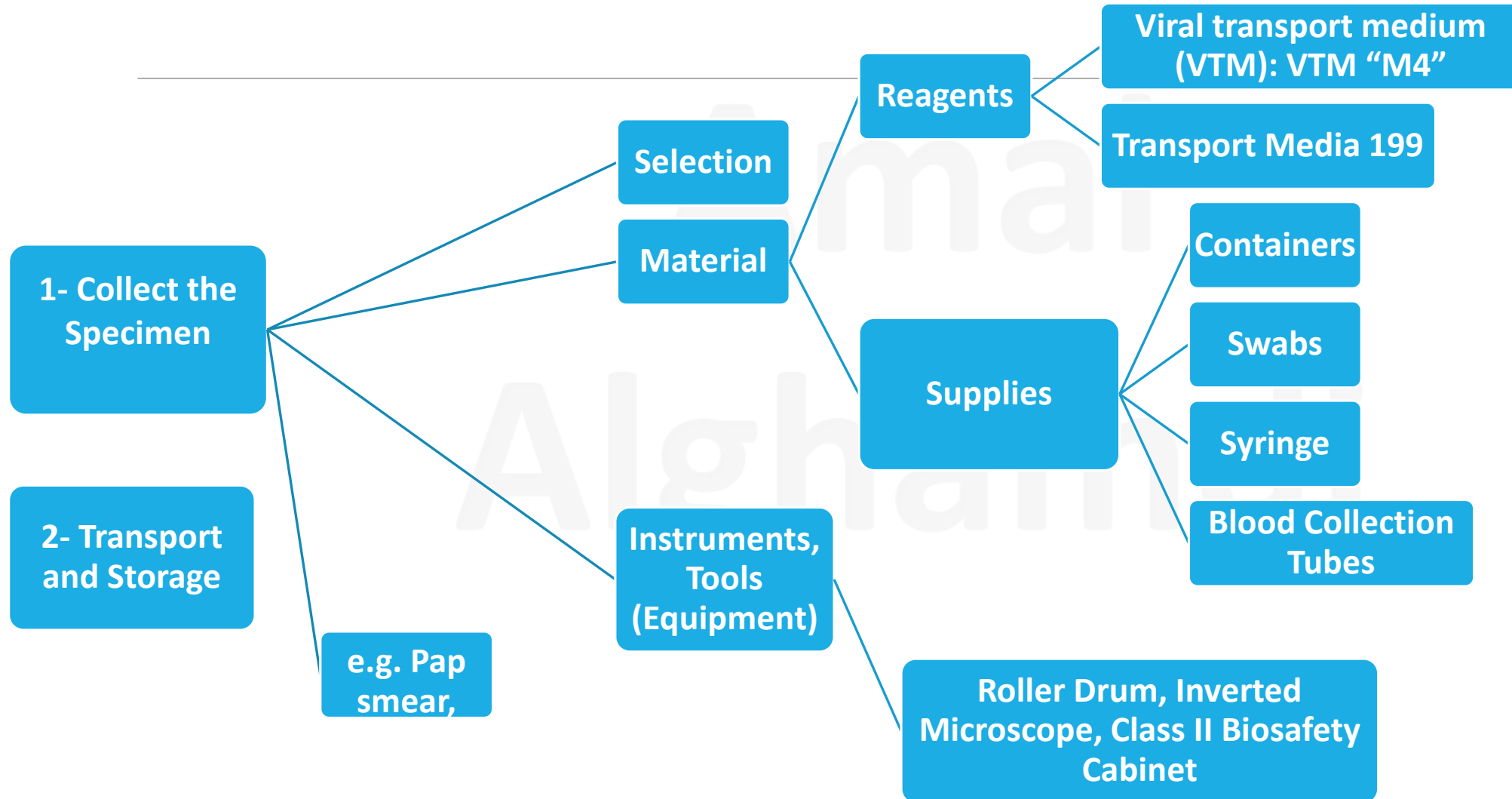
- Cell cultures can also be potentially hazardous since they can infect the laboratory worker with an endogenous or a latent virus
- One should adopt the same precautions when working with cell culture as when working with a virus



Learning outcomes

- The techniques used to collect the samples from the target organs.
- The material we should use in medical virology lab.
- The proper transport and storage viral specimens.

Setting Up a Clinical Virology Laboratory





Setting Up a Clinical Virology Laboratory

1ST -COLLECTION OF VIRUS SPECIMENS

A-Selection of specimens

B-Material used for sample collection

C-Techniques to collect samples

2ND - TRANSPORT AND STORAGE OF SPECIMENS

- Transport the specimens as directed so as to maintain viability and minimize overgrowth with contaminating organisms.
- Place each specimen into a separate container labeled with the patient's name and identification number, the collection site, the date of collection, and the time of the collection.



A-Selection of specimens

- ❑ To ensure accurate diagnosis of viral disease.
- ❑ The specimen should be collected from the target organ most closely associated with clinical symptoms to identify the etiologic agent.
- ❑ It should be collected during the acute phase of infection when viral concentration is at its maximum.

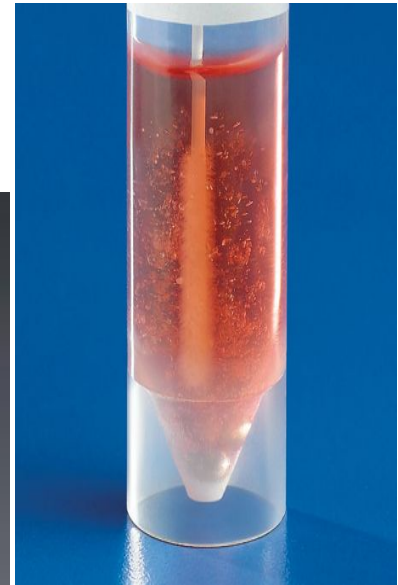
B) Materials:

1- Reagents: Viral transport medium (VTM):

- ✓ The VTM 'M4'.

Tubes containing 2-3 mL VTM are used for swab specimens, while those with 5-7 mL VTM are suitable for tissue samples.

- ✓ Transport Media 199.
- ✓ PBS-Glycerol transport medium.



B) Materials:

2- Supplies:

Amal

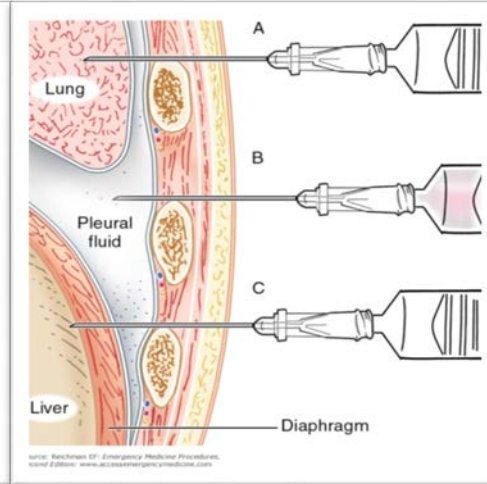
A- Containers:



B- Swabs:



C- Syringes:

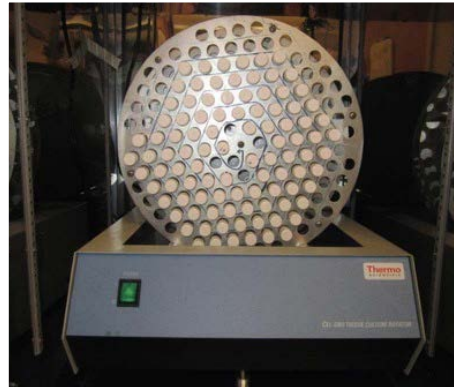


D – Blood Collecting:



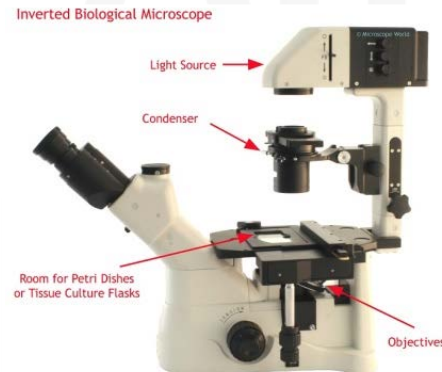
C - instruments, Tools (Equipment):

Roller drum



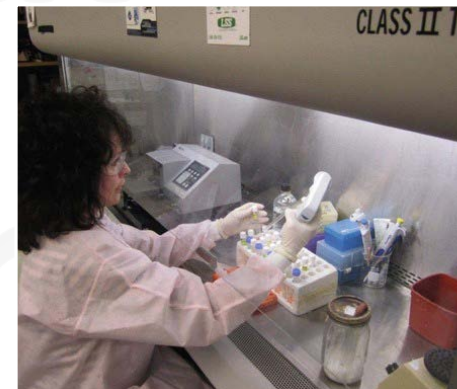
used to hold cell culture tubes during incubation. Slow rotation continually bathes the cells in the medium.

Inverted microscope



used to examine cell monolayers growing attached to the inside surface beneath the liquid medium.

Class II Biosafety Cabinet



Used in a clinical virology laboratory.

Surgical Tools

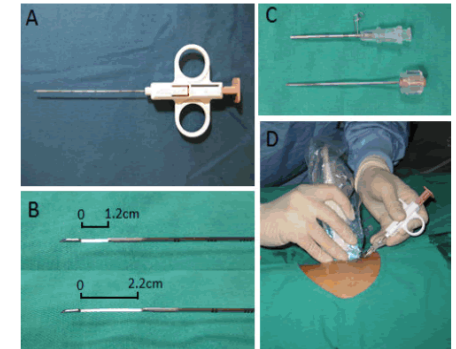


Figure 1: SuperCore biopsy instrument.

Super Core biopsy instrument.

3- How to collect samples?

1-Swabs:

Rectal swab: collect cells from open mucosa.

Vesicle or lesion swab: collect cells from open lesion.

Ocular swab: Collect from lower conjunctiva.

Throat swab (THRT): Collect from throat and tonsil area.

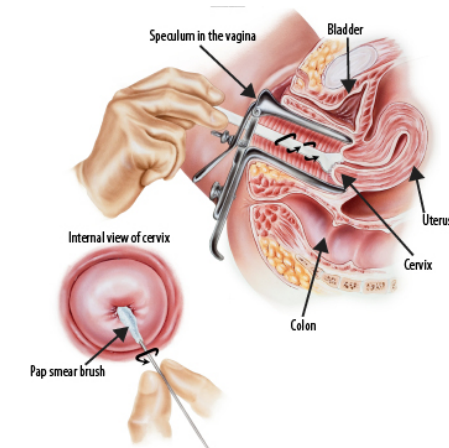
Nasal swab: Collect from nostrils.

Nasopharyngeal swab (NP): Collect from nasopharynx through nostrils.



An Example: Pap (Smear) Test

- ❑ It is a screening test for cervical cancer. It involves collection of cells from a woman's cervix during a routine pelvic exam.
- ❑ The cells are placed on a glass slide and stained with a substance known as Papanicolau stain.
- ❑ The stained cells are then examined under a microscope to look for pre-malignant (before-cancer) or malignant (cancer) changes.



3- How to collect samples? (cont`)

2-Blood (BLD): Blood collection tubes containing anticoagulant. e.g. Whole blood Collected in (EDTA) is acceptable for CMV detection.

3- Aspirate: Nasal Aspirate , Throat Aspirate and Fecal Aspirate

4- Tissue or Biopsy(BX):

5- Self Collected: Semen, Urine(URN) and Feces

6- Cerebrospinal fluid (CSF).



2ND - TRANSPORT AND STORAGE OF SPECIMENS

- Use transport bag usually combined with a request form.
- Samples should reach the laboratory within 24 hrs. If this is not possible to refrigerate
- Store samples in a short term transport storage at 4°C while in a long term transport(>72hours) storage at -70°C with liquid nitrogen.
- Swab samples can be kept at 2 – 27 °C for up to 4 - 6 days and NEVER send dry swabs.

Educational Videos:

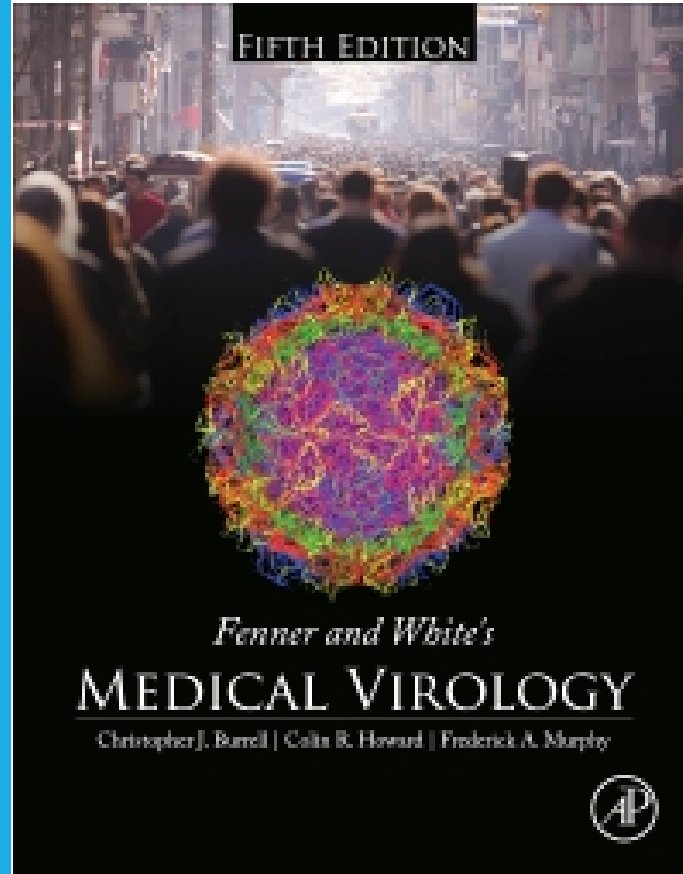
<http://www.copanusa.com/education/videos>



A transport bag

Reference:

Fenner and White's.
(2017). Medical
Virology. 5th Edition.



Any Question?

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