Specimens collection, Transport and processing

Learning outcome

- **You should be able to:**

1. Understand the basic principles for specimen collection, transport and storage condition

1. Identify unknown microorganism in specimens

Basic principles for specimen collection

- ✓ Through all stages of transport, storage and processing, specimens require proper handling from the time of collection
- ✓ Adequate amount/volume of specimen.
- ✓ Labeling the samples
- ✓ Should be collected before antimicrobial therapy
- ✓ Avoid contamination of specimens
- ✓ Should be immediately dispatched to the lab, **why ?**

Transport of specimens

- Within 2 hours of collection if possible at RT
- Use appropriate container
- Use transport media if required
- If delayed unavoidable:

✓ Refrigerate 2-4°C, or ice for 2-4 hrs, except for CSF and Blood

Timing of specimen collection

- Organism are greater in number during acute stage (diarrhea and vomiting)
- Case of typhoid fever

1. Blood culture (1st week of infection)
2. Urine/stool culture (2nd week),
3. Then serological assay is performed

Clinical samples

Specimens

(Blood, Urine, stool, sputum, etc.)

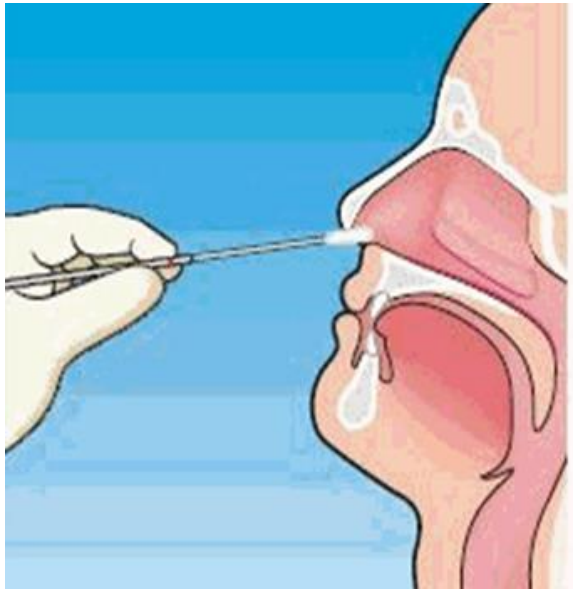
Swabs

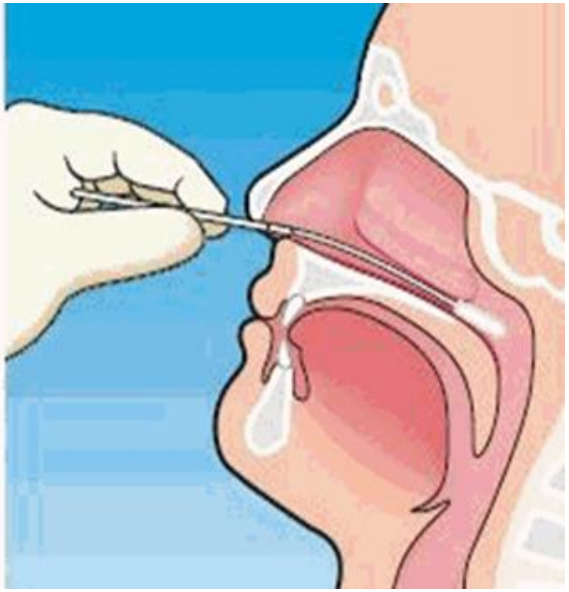
(Skin, throat, nasal, nasopharyngeal, etc.)

Body fluids

(Cerebrospinal fluid (CSF), Pleural fluid, Joint fluid, Peritoneal fluid, etc.

Specimens collection





Blood culture

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Bactec system (1)

Bactec system (2)

Urine culture

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Sputum culture

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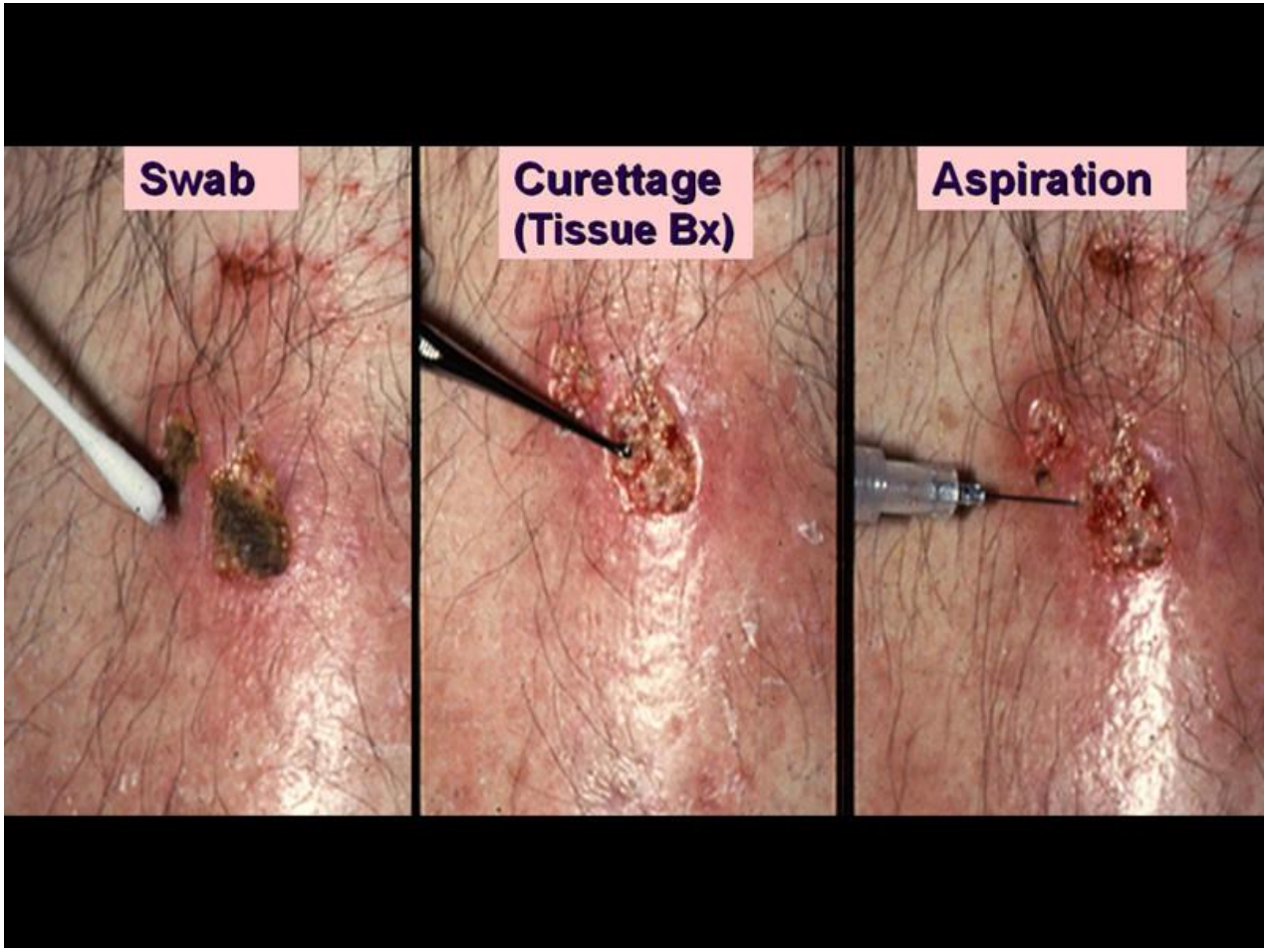
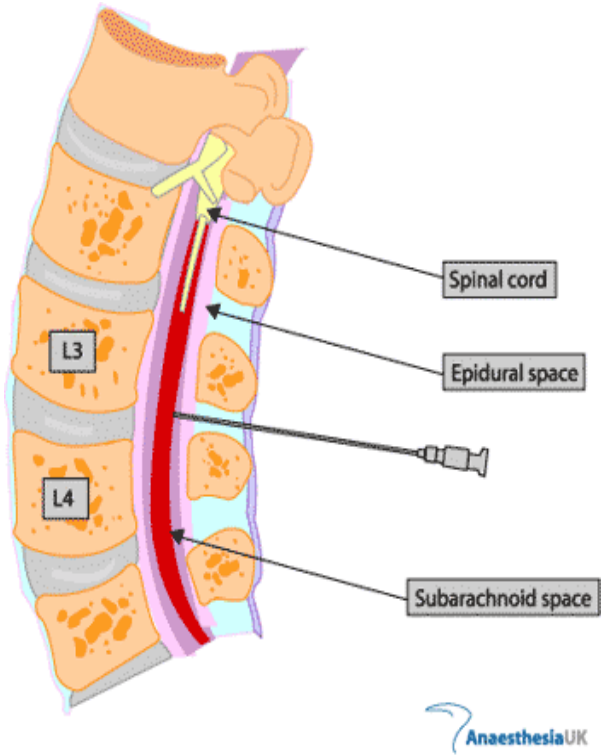
Wound culture

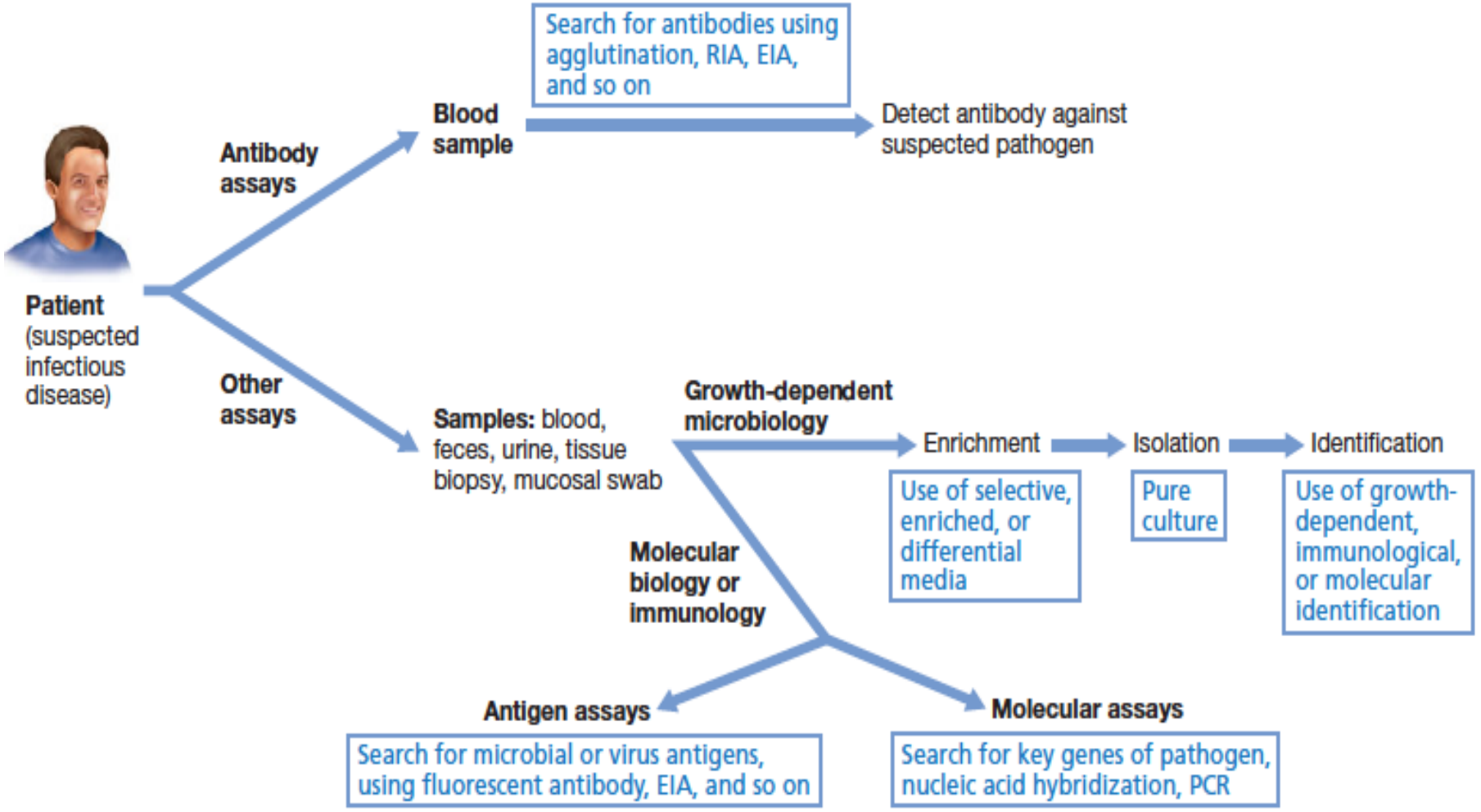


CSF Culture


Cerebrospinal fluid drawn
from between two vertebrae
A.D.A.M.


Spinal cord
L3
Epidural space
L4
Subarachnoid space
AnaesthesiaUK

Identification of clinical samples



How to identify unknown microorganism in specimen ?? (1)

1. **Conventional method:**

- ✧ Morphologic identification of stained specimens or sections of tissues.
- ✧ Culture, isolation and identification of the agent.
- ✧ Biochemical reactions
- ✧ Antimicrobial Susceptibility Test

2. **Serological diagnosis method:**

- ✧ Detection of antigen or antibody by immunological assay

How to identify unknown microorganism in specimen ?? (2)

3. Molecular methods:

- ✧ Detection of pathogen- specific gene in patient such as DNA or RNA probe
- ✧ Detection and amplification of organism nucleic acid in patients' specimens (PCR, rPCR)

Inoculation of culture media

- Use a appropriate culture media
- Used to grow bacteria/ fungi

1. Enrichment media
2. Selective media
3. Differential media
4. Characteristics media

(SDA, Lowenstein Jensen, T.C.B.S)

Home work assignment

1. Describe with examples different media used for culture and isolation?

1. What are different types of stains used in phenotypic methods?

By the end you will be able to answer these questions

1. What are the basic principles for specimen collection, transport and storage condition?

2. How to identify unknown microorganism in specimens?