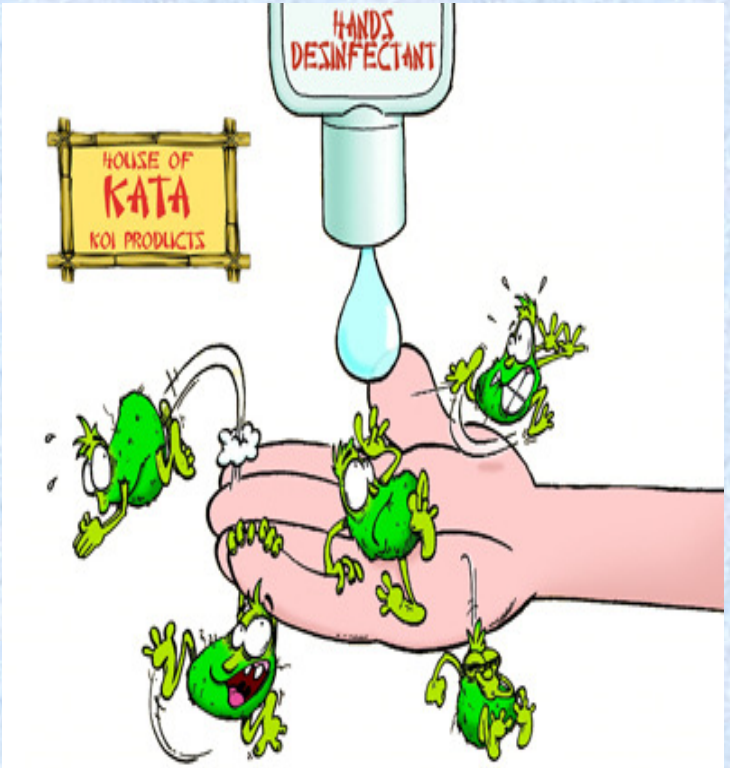
Sample Collection & transport



Objectives

- General consideration for sample collection
- Sample safety considerations
- Rejection criteria
- Collection of different samples from different sites
- Transportation
- Reference

General consideration for proper sample collection

-Every laboratory should provide proper guidelines for collection of samples

-All diagnostic information depends on quality of sample recieved

-If sample collection, transport, media are not proper, it will give false results

- Collect sample before administering antimicrobial agents when possible.
- Collect sample with as little contamination from indigenous microbiota as possible to ensure that the sample will be representative of the infected site.

- Utilize appropriate collection devices. Use sterile equipment and aseptic technique to collect specimens to prevent introduction of microorganisms during invasive procedures.

- Clearly label the specimen container with the patient's name and identification number. Always include date and time of collection and your initials.

- Collect an adequate amount of specimen. Inadequate amounts of specimen may yield false-negative results.

- Identify the specimen source and/or specific site correctly so that proper culture media will be selected during processing the laboratory.

- Collect specimens in sturdy, sterile, screw-cap, leak proof containers with lids that do not create an aerosol when opened.

- Collect sample after proper preparation of area by spirit and povidone iodine

Sample Safety considerations

- Follow universal precaution guidelines. Treat all specimens as potentially biohazardous.
- Laboratory workers should use appropriate barrier protection (such as gloves and laboratory coat or gown) when collecting or handling specimens. If splashing may occur, protective eyewear, face masks, and aprons may be necessary.

- Do not contaminate the external surface of the collection container and/or its accompanying paperwork.

- Minimize direct handling of specimens in transit from the patient to the laboratory. Use plastic sealable bags with a separate pouch for the laboratory requisition orders or transport carriers (for example, small buckets with rigid handles).

Label High risk Specimens

- Sputum with suspected Tuberculosis
- Fecal samples suspected with Cholera, Typhoid,
- Serum when suspected with HIV/ HBV/HCV, infections

REJECTION CRITERIA

- Leaking/broken container
- Insufficient amount
- Improper labelling
- More time lag between collection and transport
- Improper transport media
- Improper transport temperature
- Hemolysed sample

Important questions before *collecting a specimen*

- Are you suspecting an Infection ?
- If so what is the Nature of infection,
  eg Bacterial, Viral, Mycological or Parasitological
- Which tests are your priority ?
- When to collect the specimen ?
- How to collect the specimen ?
- Am I choosing the correct container ?
- Why to send the specimens promptly,
  if not what I should do ?

A Request form

- Should include:

  -Name ,Age ,Sex,Address
  -IPD/ OPD No ,ward,
  -Time and Date,
  -Urgent / Routine,
  -Type of specimen
  -Investigation needed
  -History of patient
  -Provisional diagnosis
  -Doctor's name and sign

When to Request Transport Medium

- When facilities are not available to perform the desired tests at the place of collection or laboratory located far away, request the Diagnostic laboratories to advice on transportation of specimens, and consider how to preserve and transport in ideal medium before it is processed

- Popularly used transport medium are
  - -Amie 's transport Medium: Gonococcal infection
  - -Carry blair medium: stool
  - -V.R Medium: Stool

Collection of different samples

- Blood
- Urine
- Stool
- Rectal swab
- Sputum
- Csf
- Mycology samples
- Wound swabs
- Water sample

Blood

- Take proper precaution (gloves)
- Avoid contamination
- Palpate vein
- Apply disinfectant
- Use sterile needle and syringe
- Collect 5-10 ml blood for two sets of culture each
- In children collect 2-5 ml
- Infuse it into BHI after cleaning with spirit

Blood for serology

- Same precautions and method
- Collect blood into plain vacutte
- It will coagulate
- Centrifuge it at 1500-2000 rpm for 5 mins
- Thus serum will be separated

Urine

For females

- Rinse area with soap and water
- Clean it with sterile gauze piece
- With both labia apart allow first few ml of urine to drain
- Take mid stream clean catch urine
- This will prevent contamination
- Collect it into wide,sterile,leak proof container

- Transport it directly to the laboratory after proper labelling
- If delay in transport, preserve it at 4-6 degree centigrade
- 10000-100000 cfu/ml will show contamination mostly

For males

- Wash hands and retract prepuce before collecting sample

- If it is not possible to obtain urine, suprapubic aspiration or catheterization may be used
- Catheterised urine should not be used ideally bcz of presence of bacteria in urethra
- For that first apply disinfectant over infusion port and then collect urine

Stool

- Collect it into wide mouth,clean, sterile,leak proof container
- Label properly
- Min 5 gms is needed if solid stool
- And 2 ml if liquid stool
- It should not be contaminated with urine
- If not possible to collect it as in children, elderly, debilitated patients- collect rectal swab

- Do not referigerate stool
- If delay in transport preserve it into 10% formalin, buffered glycerol saline

Rectal swab

- Take sterile swab
- Apply it in anal canal
- Rotate it for 10 seconds
- Avoid contact with skin
- Seal it directly into swab container to prevent contamination
- Transport immediately to lab , if not possible,preserve at 4-6 degree centigrade

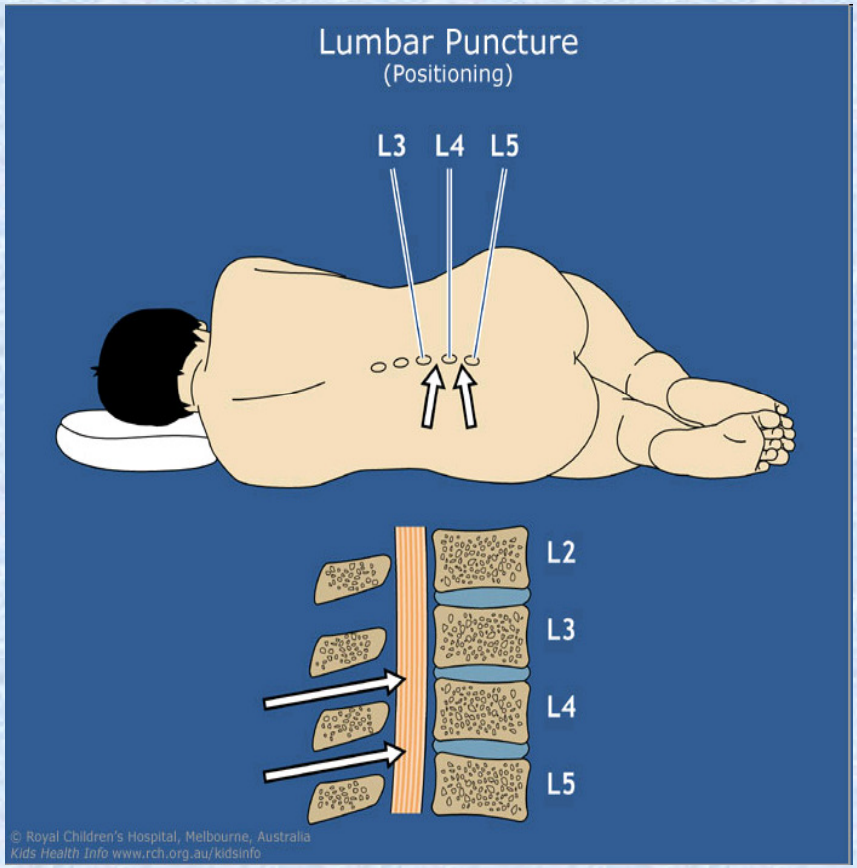
Sputum

- Wide container of 50-100 ml capacity
- For M.TB two samples are collected
- 1st at on the spot and 2nd at next day morning
- Morning sample is more reliable bcz of colonization of bacteria in LRT at night
- Before this ask patient to gargle with normal saline and take deep breath and then take sample in one bout

- This will prevent contamination
- There should not be saliva or liquid
- If there are >25 epithelial cell per LPF, sample is rejected as it shows contamination
- It should be collected before antibiotic treatment has started

Procedure to collect CSF

- Collect only 3-5 ml into a labeled sterile container
- Removal of large volume of CSF lead to headache,
- The fluid to be collected at the rate of 4-5 drops per second.



- If sudden removal of fluid is allowed may draw down cerebellum into the Foramen magnum and compress the Medulla of the Brain

Preservation of CSF

- It is important when there is delay in transportation of specimens to Laboratory do not keep in Refrigerator, which tends to kill H. Influenza

- If delay is anticipated leave at Room Temperature.

MYCOLOGY SAMPLES

- Clean site with 70% ethanol to help eliminate surface contaminants. Using a scalpel, skin scrapings should be made from the active periphery of the lesion. For nails Scrapings should be deep enough to assure acquiring recently invaded tissue Submit scrapings in a sterile Petri dish or container.
- Hair - Use forceps to pluck involved hairs from the edges of the patches. Submit hair, including shaft, in a sterile Petri dish or container.

- Other - Collect and submit specimens as described for specific type. Specimens associated with the systemic and deep seated mycoses are obtained from a wide variety of sources. They should be obtained, whenever possible, under aseptic conditions and in sufficient quantity for both microscopic and cultural examinations.

Samples from wounds

- The ideal sample is pus or exudates should be submitted in a small screw-capped bottle in firmly stoppered tube or syringe or a sealed capillary tube.

- Fragments of excised tissue removed at wound toilet or curettings from infected sinuses and other tissues should be sent in a sterile container.

- The swabs are inefficient sampling device and tends to desiccate the specimen and trap the bacteria which are then not released on to culture plate

Water for bacteriology

- Water course or reservoir - collect from a depth of at least 20 cm
- Dug well - do not allow the bottle to touch the sides of the well

- Collection

  At least 200 ml of water sample from the source

- In sterile glass bottles OR autoclavable plastic bottles
  - tight screw capped lid
  - securely fitting stoppers/caps
  - an overhanging rim

- Handling and transportation

  Test the water sample within 3 hours of collection
  - keep at ambient temperature
- If delayed:
  - pack sample on ice
  - test refrigerated sample within 24 hours

Transportation of samples

- Stool, csf and sputum should be transported at room temperature, not in refrigerator
- Urine , swabs, skin samples,water & food samples are transported asap at room temp,but if it is not possible, preserve them in refrigerator

References

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- IDSP guidelines-www.idsp.nic.in/idsp/IDSP_2WeekCourse.../WorkLaboIDSP.ppt

- NACO guidelines- naco.gov.in/upload/Blood%20Saftey/Sample%20Trtansport.pdf
- Role of specimen collection in infectious disease by Dr. T. V. Rao MD
- WHO guidelines 2011

Thank You