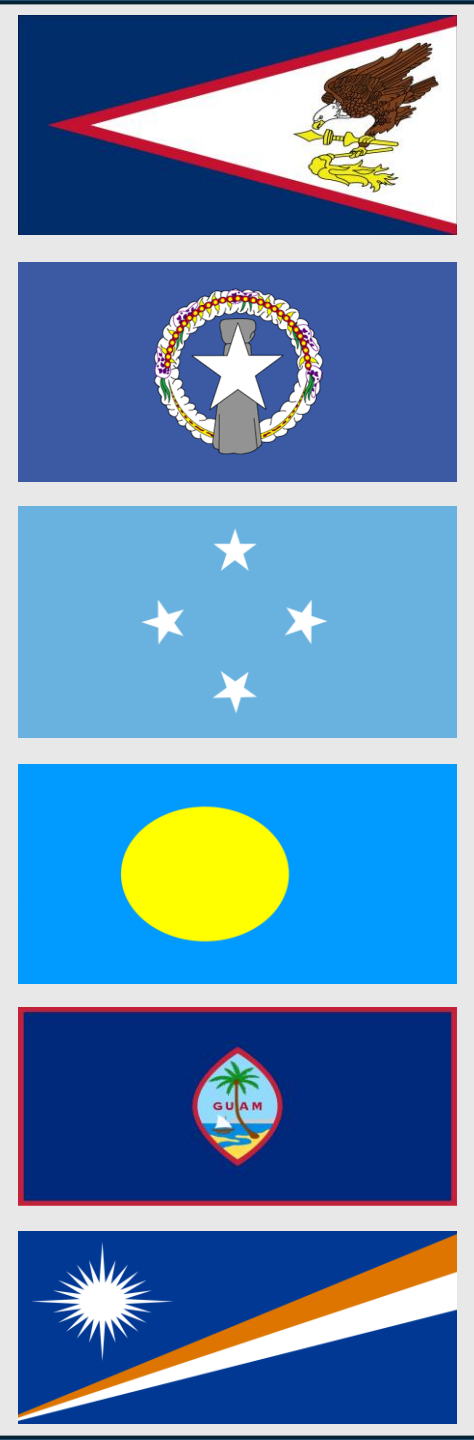


Sputum Collection: What is it? Why do we do it?

Risa Bukbuk

Shea Rabley, RN, MN
Mayo Clinic TB Nurse Consultant



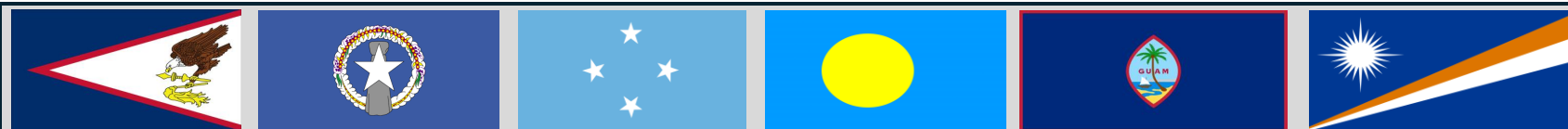
Learning Objectives

The participant will be able to:

1. List the items needed to collect a sputum specimen.
2. Identify the policy for frequency of sputum collection.
3. Name at least 2 tests conducted on a sputum specimen.

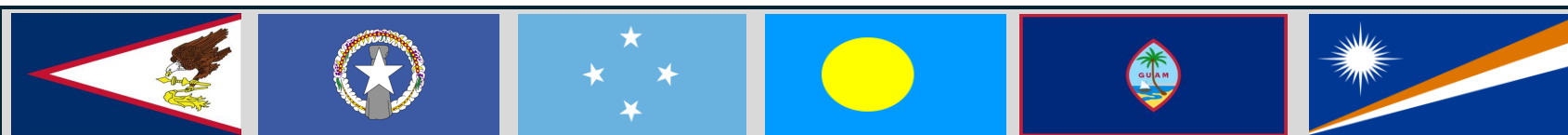


Sputum.....What is it? Why is it important?

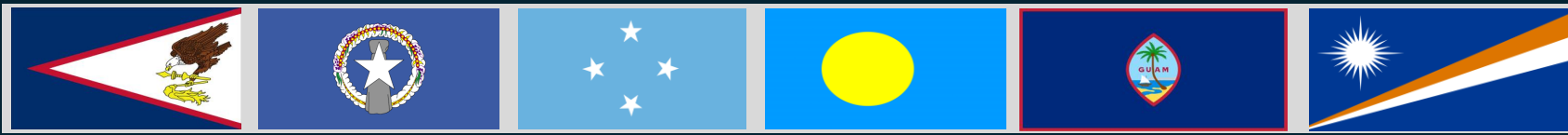


Why is sputum important?

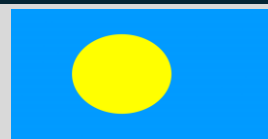
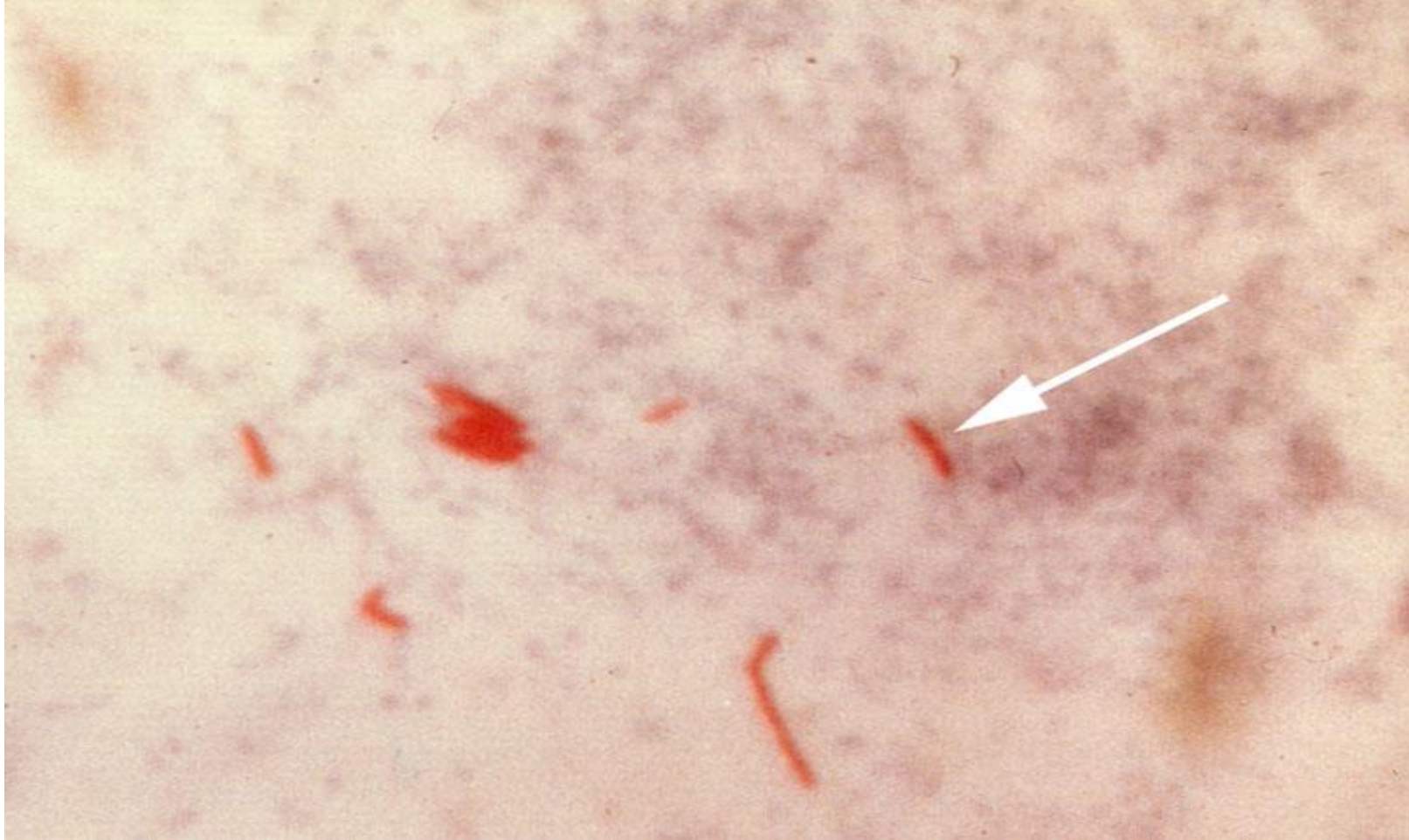
- Tuberculosis is a disease primarily of the lungs.
- Tuberculosis is caused by *Mycobacterium tuberculosis bacilli*
- Tubercle bacilli are expelled from the lungs by coughing, speaking, sneezing, singing..... Anything that forcefully expels air from the lungs.
- Testing sputum is part of the diagnostic process for TB.
- Sputum tests help gauge the disease status and help document progress.
- Another piece of the puzzle taken in consideration with other tests & assessments.
- Results of tests on sputum help guide the actual treatment regimen.



What are we looking for ???

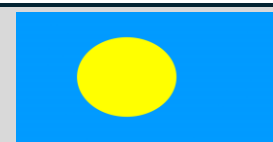


Acid Fast Bacilli

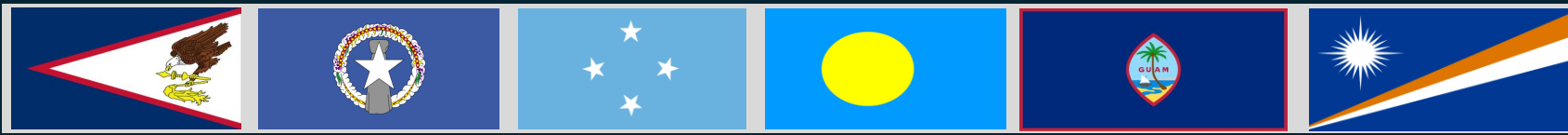


Key Points

- Strongly consider TB disease in patients with smears containing acid-fast bacilli (AFB)
- Results should be available within 24 hours of the specimen reaching the laboratory
- Consider a presumptive diagnosis of TB disease until proven otherwise



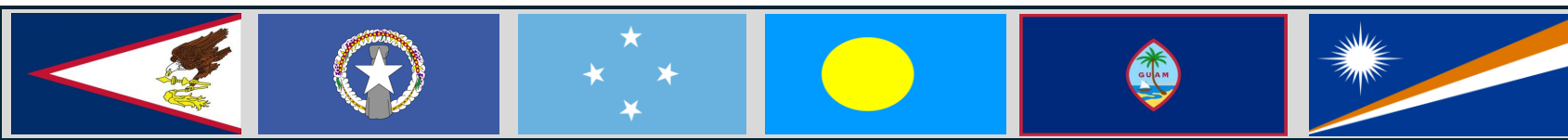
How to Collect A Sputum Specimen





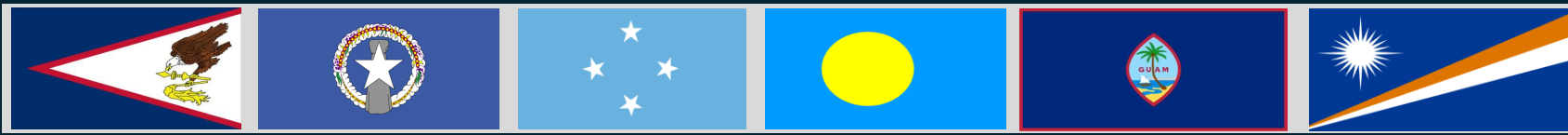
When coaching your patient to produce a sputum sample, you can...

1. Put them in the bathroom with the hot water running in the shower/tub and close the door.
2. Take for a long walk around the block.
3. Have the patient brush their teeth and use mouthwash.
4. Have the patient take 2 short, quick breaths.



What you need

- Collection tube or cup (with a screw cap)
- Plastic Biohazard closable bag
- Paper bag or something to put it in
- Lab requisition for the patient
- Pen or Sharpie
- Bottle of water



Sputum Collection Guide

South Carolina

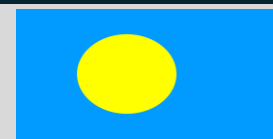
SPUTUM COLLECTION GUIDE

You will need...

-  A collection tube
-  A plastic bag
-  A paper bag

-  **1** Wake up
-  **2** Take 3 deep breaths
-  **3** Cough up phlegm
-  **4** Spit phlegm into tube
-  **5** Do not put mouth on tube
-  **6** Screw cap onto tube
-  **7** Label tube with name and date
-  **8** Put tube in plastic bag
-  **9** Put plastic bag in paper bag
-  **10** Put paper bag in refrigerator
-  **11** Collect 1 tube a day for 3 days

Graphics from Multnomah County Health Department TB Program



Instructions for Collecting Sputum for TB

Back of South Carolina sheet

Instructions for Collecting Sputum for TB

Why Is a Sputum Test Necessary?

- Your doctor wants to collect some of the sputum ("phlegm") that you cough up from your lungs. The laboratory will test the sputum for tuberculosis (TB) germs.
- Checking your sputum is the best way to find out if you have TB disease. If you are already taking medicine for TB, checking your sputum is the best way to tell if the medicine is working.
- To be sure the test is accurate, you must cough up sputum from deep inside your lungs. Sputum from your lungs is usually thick and sticky. Saliva comes from your mouth and is watery and thin. Do not collect saliva.

How to Collect a Sputum Sample

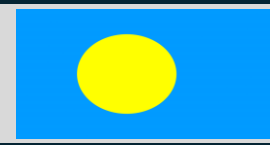
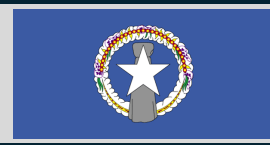
1. Your doctor or nurse will give you a special plastic cup for collecting your sputum. Follow these steps carefully: The cup is very clean. Don't open it until you are ready to use it.
2. As soon as you wake up in the morning (before you eat or drink anything), brush your teeth and rinse your mouth with water. Do not use mouthwash.
3. If possible, go outside or open a window before collecting the sputum sample. This helps protect other people from TB germs when you cough.
4. Take a very deep breath and hold the air for 5 seconds. Slowly breathe out. Take another deep breath and cough hard until some sputum comes up into your mouth.
5. Spit the sputum into the plastic cup.
6. Keep doing this until the sputum reaches the 5 ml line (or more) on the plastic cup. This is about 1 teaspoon of sputum.
7. Screw the cap on the cup tightly so it doesn't leak.
8. Wash and dry the outside of the cup.
9. Write on the cup the date you collected the sputum.
Tip: If you cannot cough up sputum, try breathing steam from a hot shower or a pan of boiling water.
10. Put the cup into the box or bag the nurse gave you.
11. Give the cup to your clinic or nurse. You can store the cup in the refrigerator overnight if necessary. Do not put it in the freezer or leave it at room temperature.

Adapted from Oregon Health Authority, Public Health Division.



For more information, contact DHEC TB Control at 803-898-0558.

CR-013026 1/21



USAPI Regional TB Training 2024

Sputum Collection South Dakota



SPUTUM COLLECTION INSTRUCTIONS



General Information

- Sputum is mucous or phlegm coughed from deep in the lungs. It is not saliva from the mouth or mucous from the back of the throat.
- Sputum specimens should be collected in the early morning if possible.
- Collect 3 sputum specimens on 3 consecutive days unless otherwise instructed.
- Specimens should be kept in the refrigerator until they are submitted to the laboratory.
- To reduce the likelihood of transmission, patients are encouraged to collect sputum specimens outdoors when possible and away from other people.

Procedure

1. The container is clean.
Do not open until ready to use.
2. The mouth should be free of foreign matter and may be rinsed with filtered water prior to collection.
3. Take deep breaths through your mouth and cough up the mucous from deep in your lungs. Breathing deeply over a pan of boiling water may help raise sputum.
4. Open the container and hold it close to your mouth. Cough the mucous into the container.
5. 1-2 teaspoons of specimen is adequate. The container should not be more than $\frac{1}{2}$ full.
6. Once collected, screw the lid on tightly.
7. Write patient name, date of birth and collection date on specimen bottle.
8. Write patient name, date of birth and collection date on laboratory slip.
9. Specimen should be double bagged in the plastic bags provided.
10. Store specimen in the refrigerator until transported.
11. Notify Department of Health staff to arrange for transport of specimen to the laboratory. Specimens should be transported the same day as collected unless otherwise instructed.

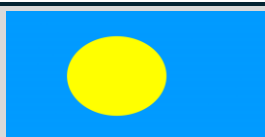


Department of Health Contact Information

TB Case Manager _____ Phone _____
Address _____

HS444

Revised 2-2021



USAPI Regional TB Training 2024

TIPS for Better Sputum Specimen Collection



Induced sputum will be watery. Note on lab forms before submitting to the lab.



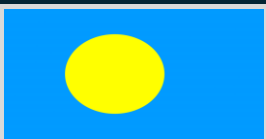
Use steam from hot shower to hydrate mucosa prior to sputum collection



Can also inhale the steam from water that is boiling on the stove.



May rinse mouth with water only – spit it out. Do not brush teeth or rinse with mouthwash prior to collection.



TIPS for Better Sputum Specimen Collection



Assure the client stays well hydrated.



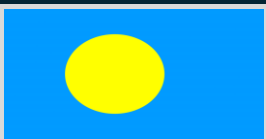
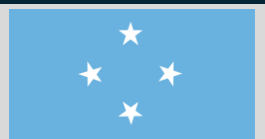
Early morning specimens are best – will be thick and opaque



Remove dentures



Take 3 slow, deep breaths & cough deeply



TIPS for Better Sputum Specimen Collection



Instruct the patient to place the specimen in the refrigerator after collection.



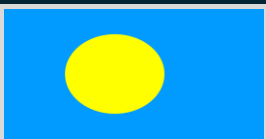
Coach your patient throughout the process of collecting the sputum.



Every 2 weeks is every 14 days...especially when trying to document conversion.



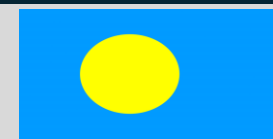
Always protect yourself with appropriate PPE.



Home Sputum Collection: A Step-by-Step Guide

Public Health
Madison and
Dane County

<https://www.youtube.com/watch?v=8DbGSgRuBZA>

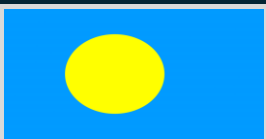


USAPI Regional TB Training 2024



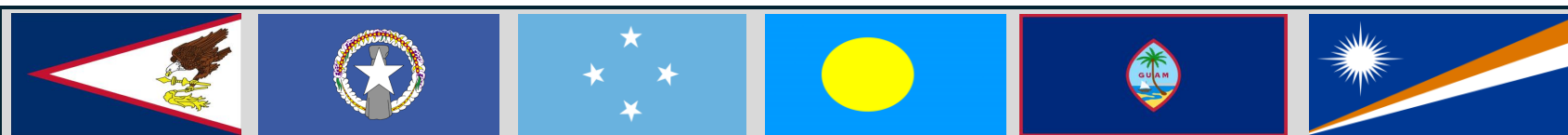
What equipment is needed to obtain a sputum sample?

1. Sharpie pen and plastic bag
2. Cup with snap-on lid, brown paper bag
3. Laboratory slip, pencil
4. Plastic biohazard bag, cup/tube with screw lid



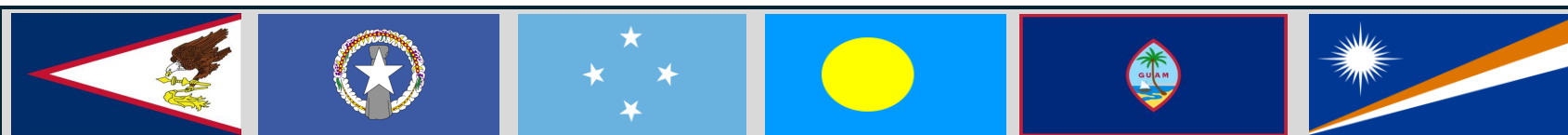
Schedule of Sputum collection

- During Diagnosis x3: all kinds of patients. ExPT/PTB
- 1st: **Spot** (must be observed by a nurse or chow) (at least 5ml)and **should be marked with a special pen so the patient can see see**
- The nurse must checking it before deliver it to the lab, should be a mucoid not a saliva
- 2nd: **morning** (self collection) should be explained well by the health provider: upon wake up; rinse mouth with clean water, take deep breaths, or walk around or drink water to induce sputum and. Same amount at least 5mls. Should be in a cool place
- Patients then can be deliver to the tb clinic not later than 2 hours
- The nurse will check it before delivering to the lab once received
- 3rd. **Spot** collection. Patient will collect the x3 sputum when the patient delivers the second sputum samples. This sp collection must be observed as well by a tb staff and deliver to the lab right away



Frequency

- During diagnosis x3
- If patient is admitted to the isolation unit because of AFB smear +/- 1 follow up sputum at two weeks
- If still positive, will remain and collect another sputum one week later, will collect every weeks until its converted
- 1 follow up at 2 months if regular tb patients or
- 1 follow up at 3 months if diabetes
- 1 follow up at 6 mos
- 1 follow up at 9 months if diabetes
- Or based on Clinician's evaluation
- At 12 month if needed



DOB:

[illegible]

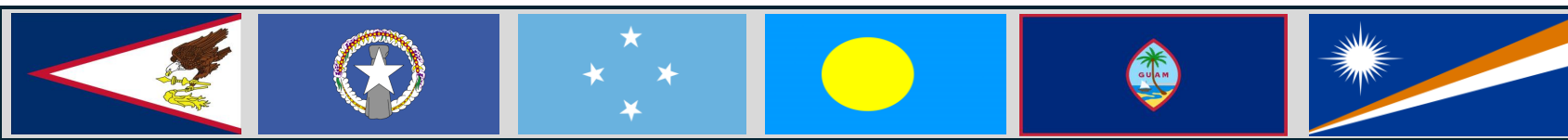
South Carolina

Client's ID Number _____
 Client's Name _____
 Date of Birth _____



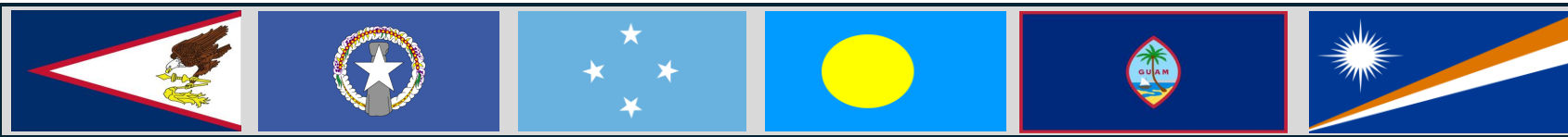
What happens to the sputum specimen when it arrives in the Laboratory?

1. Decontamination – assures oral flora are removed.
2. Smear sputum on a slide, stain, then wash with an acid solution. Acid fast means it retains the dye. Count AFB noted.
3. Nucleic Acid Amplification Test (NAAT) is done (Gene-XPert, MTD, PCR). First pulmonary specimen only. Can not differentiate between dead or live AFB.



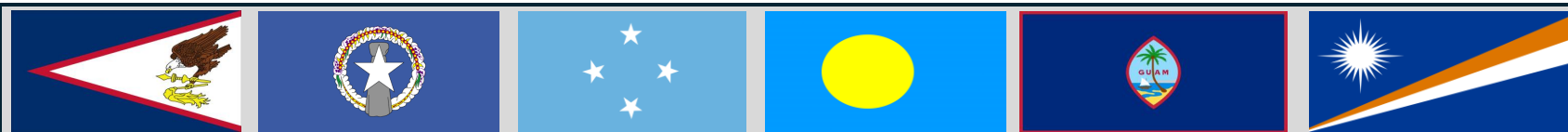
Lab....

4. Culture.... Can be a liquid medium (takes about 4 weeks) or a plate (takes about 8 weeks)
5. DSTs – Drug Susceptibility Tests – first line drugs - unless known drug resistance. If resistance is found, requires medication regimen changes and follow-up testing. Gene-Xpert can note Rifampin resistance.
6. Genotyping/Sequencing – Sample goes to CDC to look for genetic links between cases – known and unknown

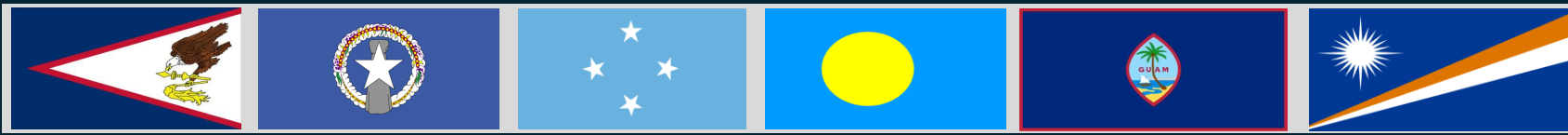


Interesting Caveats

- Smear is only as good as the actual sputum specimen
- Usually reported with a numeric value per field none, rare, 1+, 2+, 3+, 4+
- Taken in conjunction with the TST/IGRA, CXR, history and sign/symptom assessment, the result can give an overall the picture of this patient and their disease status



Questions and Answers



Resources

South Carolina Department of Public Health Sputum Collection Guide, January 2021.

South Dakota Sputum Collection Instructions located at:

<https://doh.sd.gov/media/yqufzvaw/sputum-collection-instructions-hs444.pdf>

https://oeps.wv.gov/tuberculosis/documents/lhd/AFB_Patient_Collection_Instructions.pdf

<https://www.health.state.mn.us/diseases/tb/basics/factsheets/sputum.html>

<https://www.ncbi.nlm.nih.gov/books/NBK593194/#:~:text=When%20the%20patient%20has%20mobilized,until%20this%20amount%20is%20achieved.>

<https://elsevier.health/en-US/preview/specimen-sputum-hhc>

<https://www.dhs.wisconsin.gov/publications/p02381.pdf>

<https://www.nationaljewish.org/conditions/tests-procedures/sputum-induction>

https://www.utmb.edu/policies_and_procedures/Non-IHOP/Respiratory/Respiratory_Care_Services/07.03.26%20Sputum%20Induction.pdf

Dane County Home Sputum Collection Video located at: <https://www.youtube.com/watch?v=8DbGSgRuBZ>

