

What You Need To Know About Testing Sputum Samples:

Nucleic Acid Amplification Test (NAAT) Edition

I. What is a Nucleic Acid Amplification Test (NAAT)?

- The NAAT is a diagnostic tool that can detect *Mycobacterium tuberculosis* (MTB) without waiting two or three weeks for a culture to grow.
- Currently, the FDA has approved two NAAT tests. We use the Hologic Gen-Probe's Amplified MTD Test.
- It is ordered for TB suspects who fit the following criteria:
 - High suspicion of TB disease
 - Patient has received less than 7 days of TB treatment and has not received TB treatment within the last year.

Chief Nurse must approve all requests.

II. Why do we run a NAAT?

- The purpose of the test is to better predict a TB diagnosis in a short amount of time. This does not replace a culture test.
- It can guide programmatic decisions, such as prioritizing contact investigations.

III. How does the laboratory run this test?

1. Houston TB Control can request a NAAT for patients who fit the above criteria within 48-72 hours of running a direct AFB smear. See [SAMPLE NAAT Request Form](#).
2. The sputum sediment is prepared in one tube using two steps:
 - a. Amplification: The tube is shaken and heated to separate and multiply the nucleic acid.
 - b. Detection: A light-emitting mixture is added to the tube. If MTB is present, the mixture will bind to the nucleic acid and produce a unique amount of light.
3. The sample will be put into a luminometer. This will read the amount of light the tube gives off and print results.

A unidirectional workflow must be maintained at all times.

IV. Results: What to Expect

- Results are reported to TB Control within 48-72 hours as:
 - Positive: MTB complex rRNA detected. Culture studies in progress.
 - Negative: No MTB complex rRNA detected. Culture studies in progress.
 - Indeterminate: Inconclusive results for MTB complex rRNA detected. Culture studies in progress.
- Programmatic decisions are made based upon the following:

AFB Smear Result	NAAT Result	Confirmed TB case by culture?
Positive	Negative	Unlikely. Case management will continue until the culture is available. CI activities can be put on hold, if needed.
Positive	Positive	Very likely. Proceed as if this was a confirmed TB case.
Negative	Negative	Perhaps. Case management will continue until the culture is available. CI activities can be put on hold, if needed.
Negative	Positive	Very likely. Proceed as if this was a confirmed TB case.

V. Next steps

- Try to grow something! See [Culture Media Inoculation Edition](#) for more information.

What is Nucleic Acid?



- Commonly known as DNA or RNA.
- Nucleic acids are the building blocks of life for all organisms.
- Nucleic acids carry our genetic code, which is the manual our body uses to function.