

<b>Tuberculosis Laboratory Diagnostics Summary</b>	
<b>AFB Smear</b>	<ul style="list-style-type: none"> <li>• Tests for the presence of any mycobacterium</li> <li>• Results available within 24 hours</li> <li>• Provides clue to potential infectivity</li> <li>• Does not differentiate between live and dead mycobacterium</li> <li>• Performed in most laboratories</li> </ul>
<b>AFB Culture</b>	<ul style="list-style-type: none"> <li>• Gold standard for diagnosing TB</li> <li>• Results typically available in 2-8 weeks</li> <li>• Only detects live mycobacterium</li> <li>• Performed at WAPHL, Harborview, SeaKing PHL, PAML, UW, and commercial labs</li> </ul>
<b>Species Identification</b>	<ul style="list-style-type: none"> <li>• Performed <u>automatically</u> on positive cultures to determine the type of mycobacterium present</li> <li>• One of the following methods is used to identify the species:               <ul style="list-style-type: none"> <li>○ DNA Probe (AccuProbe)</li> <li>○ Hsp65 sequencing</li> <li>○ High Performance (or Pressure) Liquid Chromatography (HPLC)</li> </ul> </li> </ul>
<b>Nucleic Acid Amplification Test (NAAT)</b>	<ul style="list-style-type: none"> <li>• Detects TB DNA</li> <li>• Performed after AFB smear, if ordered (more sensitive on smear positive specimens)</li> <li>• A positive NAAT is considered a confirmed case of TB</li> <li>• A negative NAAT does not rule out TB</li> <li>• Results available in 24-72 hours</li> <li>• Does not differentiate between live and dead mycobacterium</li> <li>• Two methods for NAA testing include:               <ul style="list-style-type: none"> <li>○ Polymerase Chain Reaction (PCR) performed at WAPHL</li> <li>○ Hsp65 Sequencing performed at UW</li> </ul> </li> </ul>
<b>Drug Sensitivity Testing</b>	<ul style="list-style-type: none"> <li>• First-line (SIRE and usually PZA) performed <u>automatically</u>, using MGIT instrument, on culture positive specimens</li> <li>• Available within 30 days of culture positive result</li> <li>• Performed at Harborview, PAML, or WAPHL</li> <li>• Second-line performed at WAPHL or CDC using plate or Agar Proportion Method, if first-line resistance detected</li> </ul>
<b>Drug Resistance Mutation Detection</b>	<ul style="list-style-type: none"> <li>• Detects common mutations located within specific regions of TB DNA</li> <li>• Performed when requested on NAAT or culture positive specimens</li> <li>• Two methods for detecting mutations include:               <ul style="list-style-type: none"> <li>○ Drug Resistance Screening by Sequencing (DRSS) performed at WAPHL</li> <li>○ Molecular Detection of Drug Resistance (MDDR) performed at CDC</li> </ul> </li> <li>• Detected mutation does not always mean total resistance to the drug(s)</li> </ul>
<b>Genotyping</b>	<ul style="list-style-type: none"> <li>• Performed <u>automatically</u> on culture positive specimens</li> <li>• Determines the strain of TB and whether it matches other strains of TB</li> <li>• Performed by a CDC contracted lab in Michigan</li> </ul>
<p>Acronyms: Washington State Public Health Lab (WAPHL), Seattle and King County Public Health Lab (SeaKing PHL), Pathology Associates Medical Laboratory (PAML), University of Washington (UW), Centers for Disease Control (CDC), Streptomycin, Isoniazid, Rifampin, Ethambutol (SIRE), Pyrazinamide (PZA)</p>	