申請繼續教育積分課程主題摘要內容

課程主題摘要內容 1：

主講題目	The clinical value of rapid detection for INH-resistant tuberculosis
摘要內容	Globally, Hr-TB prevalence is notable, affecting 7.4% of new cases and 11.4% of previously treated patients. Resistance mechanisms primarily involve katG codon 315 mutations, causing high-level resistance, and inhA mutations, which confer low-level resistance. Historically, treating Hr-TB with standard first-line drugs has resulted in suboptimal clinical outcomes, including elevated rates of treatment failure, relapse, and acquired multidrug-resistant tuberculosis (MDR-TB). To improve outcomes, recent meta-analyses and World Health Organization guidelines recommend modifying standard regimens by incorporating a fluoroquinolone, such as levofloxacin, into a 6-month regimen, which is associated with better treatment success. Conversely, the addition of streptomycin is linked to reduced success. Furthermore, a Taiwan-based cohort study highlights that while high-level resistance does not significantly delay culture conversion or reduce one-year survival, it substantially increases the long-term risk of developing MDR-TB compared to low-level resistance. Consequently, rapid molecular diagnostic testing is essential to detect specific resistance genes early, allowing clinicians to tailor treatment regimens and avert the acquisition of further drug resistance.

課程主題摘要內容 2：

主講題目	How can we detect isoniazid-resistant tuberculosis rapidly?
摘要內容	Isoniazid remains one of the most important first-line drugs for the treatment of tuberculosis, yet rapid detection of isoniazid resistance remains more challenging than detection of rifampicin resistance. Unlike rifampicin resistance, which is largely associated with mutations within a relatively confined region of the rpoB gene, isoniazid resistance is genetically more heterogeneous and may involve mutations in katG, the inhA promoter, fabG1, the oxyR-ahpC intergenic region, and other loci. Different resistance mechanisms may also have distinct implications for resistance levels and for interpreting additional anti-tuberculosis drugs. This lecture will focus on the diagnostic technologies available for the

	rapid detection of isoniazid resistance. The session will first review the molecular basis of isoniazid resistance and explain why no single genetic target can capture all resistant isolates. The session will then compare currently available commercial assays, including line probe assays, Xpert MTB/XDR, and moderate-complexity automated nucleic acid amplification platforms such as BD MAX and cobas. We will discuss their diagnostic performance, resistance targets, turnaround time, throughput, workflow requirements, and potential roles across different laboratory settings. The lecture will also introduce targeted next-generation sequencing approaches, including commercial and emerging direct-from-specimen platforms, and consider how broader mutation detection may move tuberculosis diagnostics beyond a simple susceptible-versus-resistant classification. Finally, the review will highlight several emerging technologies—including nanopore-based targeted sequencing, CRISPR-based assays, and rapid phenotypic susceptibility testing—for their potential to further shorten the time from specimen collection to clinically actionable resistance information. The overall goal is to provide a practical framework for understanding how different rapid diagnostic technologies can be positioned within a modern tuberculosis diagnostic network, from decentralized testing to high-throughput reference laboratories.

課程主題摘要內容 3：

主講題目	How do we treat isoniazid-resistant tuberculosis ?
摘要內容	Isoniazid-resistant tuberculosis is the most common form of drug-resistant TB, yet remains under-recognized and is associated with treatment failure, relapse, and amplification to multidrug resistance. This talk reviews the approach for treating isoniazid-resistant tuberculosis, the evidence supporting the six-month (H)REZ-levofloxacin regimen, and the differences between different guidelines-particularly regarding fluoroquinolone stewardship and delayed susceptibility testing. The impact of rapid molecular diagnostics on treatment decisions, together with illustrative cases from Taiwan, is also presented.