

Collaborating to control tuberculosis

ABOUT PATH

PATH is an international nonprofit organization that creates sustainable, culturally relevant solutions, enabling communities worldwide to break longstanding cycles of poor health. By collaborating with diverse public- and private-sector partners, PATH helps provide appropriate health technologies and vital strategies that change the way people think and act. PATH's work improves global health and well-being.

PATH'S GLOBAL FIGHT AGAINST TUBERCULOSIS

Tuberculosis (TB) is one of the world's major health challenges. Each year, there are around 9 million new cases of TB and close to 2 million deaths.

Through international cooperation, PATH works to bring internationally recommended treatment strategies more effectively to more people. PATH also addresses the growing threat of drug-resistant TB; improves care for people with TB/HIV co-infection; strengthens the capacity of advocacy, communication, and social mobilization (ACSM) for TB control; and develops innovative technology solutions for countries with high TB burdens.

PATH helps to reduce TB around the world by providing a range of technical expertise, including:

- Program design.
- Policy development.
- ACSM.
- Laboratory and systems strengthening.
- Monitoring and evaluation.
- Nurse case management and social support.
- Public-private partnerships for TB control.
- TB/HIV program integration.
- Management of multi-drug resistant TB (MDR-TB).
- Pilot evaluation of new TB diagnostic tools.

PATH'S WORK IN CHINA

China has the most MDR-TB cases in the world and the second largest number of overall TB cases. The World Health Organization classifies China as a high-burden country. There are an estimated 120,000 new cases of



Xia Hui

MDR-TB each year in China, accounting for 24 percent of the global total.

With funding from the Bill & Melinda Gates Foundation, PATH is responding to the challenge. In collaboration with the Foundation for Innovative New Diagnostics and the Hong Kong Supranational Reference Laboratory, PATH assists the Chinese National TB Reference Laboratory with determining the operational feasibility, cost-effectiveness, and impact of new TB diagnostics in order to help the Chinese Ministry of Health decide whether to introduce and scale up these technologies.

The following technologies are currently being validated:

- Light-emitting diode (LED)-based fluorescence microscope—a tool for improving the sensitivity of sputum-smear microscopy for TB diagnosis.
- Geno-Type® MTBDR*plus* and Genechip®—molecular methods for rapid diagnosis of MDR-TB based on detection of mutations associated with resistance to rifampicin and isoniazide.
- Loop-mediated isothermal amplification—a novel nucleic acid amplification method for rapid diagnosis of all forms of pulmonary TB, especially for patients who are smear-negative.
- GeneXpert® MTB/RIF assay—a technique for rapid diagnosis and screening for drug-resistance.

THE WAY FORWARD

Together with our international, national and local partners, PATH is helping China harness the collective commitment of its people and improving access to high-quality diagnostics for tuberculosis control to ensure better health for all.

帕斯结核病控制合作项目

关于帕斯

帕斯是一个非营利性国际组织，我们致力于创造可持续发展的、适应本土文化的健康解决方案，帮助全球社区打破不利于健康的恶性循环。通过与多样化的公立和私营机构的合作，我们帮助提供适宜健康技术和关键策略，改变人们思维方式和行为方式，致力于改善全球公共卫生和福祉。

帕斯全球结核病控制合作项目

结核病是当前全球主要的健康问题之一，每年约有900万新发结核病人，有将近200万人死于结核病。

帕斯通过国际协作及与全球各国家的伙伴关系，致力于更有效的推广国际推荐的治疗策略，使更多的病人接受到有质量保证的结核治疗，应对耐多药结核病的威胁；加强对结核病/艾滋病双重感染病人的治疗和关爱；提高进行结核病防控的倡导、沟通和社会动员的能力；在结核高负担国家开发新的技术解决方案。

帕斯通过如下结核控制方面的技术优势在全球范围内致力于减轻结核病的负担：

- 项目设计和政策的开发
- 倡导、沟通和社会动员
- 实验室能力加强和质量保证体系建立
- 督导和评估
- 病人护理管理和社会支持
- 结核病防控公立及私营机构的合作
- 结核病/艾滋病联合防治
- 耐多药结核病的管理
- 新型结核病诊断技术的现场评估等

帕斯中国结核病控制合作项目

中国是全球结核病高负担国家之一，据估计结核患者数为全球第二；耐多药结核患者数居全球第一；每年新发耐多药结核患者约12万例；约占全球每年新发耐多药结核患者的24%。



Wang Yue

为了应对在结核病患者诊断及发现中面临的挑战，在盖茨基金会的支持下，帕斯与创新诊断技术基金会、香港结核病跨国参比实验室合作，从项目管理和技术上支持中国结核病参比实验室在中国评估和验证新的结核诊断技术，以期为卫生部等行政部门决策推广具有广泛应用前景的新型结核病诊断工具提供依据，提高中国结核病的实验室诊断能力。

目前，正在中国进行现场验证评估的技术包括：

- LED荧光显微镜：提高痰涂片显微镜检查的灵敏度；
- GenoType®MTBDRplus线性探针技术和基因芯片技术：通过PCR和杂交从涂阳痰标本中检测与异烟肼和利福平耐药直接相关的基因突变，快速诊断耐药结核病；
- 环介导等温扩增技术 (LAMP)：通过核酸扩增快速诊断结核，特别是提高对涂片阴性肺结核患者的检出；
- Xpert MTB/RIF：自动分子生物学检测平台，在快速诊断结核病的同时，可检测对利福平的耐药状况。

未来展望

基于与国际和国内合作伙伴在结核病控制方面积累的丰富经验，帕斯将通过与中国及其他结核病高负担国家建立更广泛的伙伴关系，寻求更多的机会以新技术方法、新方案的研发和应用支持这些国家的结核病控制策略的实施。

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