

## **Australian Respiratory Council Research Support Grants 2023/2024 Funding**

**Project Title:** Finding tuberculosis among adolescents: new diagnostic tools and strategies

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In 2022, 10.6 million people developed tuberculosis (TB), but >3 million were not diagnosed. Adolescents aged 10-19 years are vulnerable to developing TB and are highly infectious once sick, but TB epidemiology in this group is only crudely characterised. Lasting health impacts and social outcomes (i.e., resulting from school absences, social stigma, or other factors) of TB during adolescence are poorly understood.

The World Health Organisation (WHO) has stated that 10–19-year-olds need adolescent-friendly TB services, but acknowledges that the lack of adolescent-specific data is preventing countries from tailoring approaches to adolescents' unique needs. Large discrepancies between modelled case estimates and cases reported to WHO1 indicate that TB is severely under-diagnosed in adolescents, so new strategies are evidently needed for diagnostic testing in this group.

Fortunately, there have been advances in TB diagnostics in the last 10 years, such as the roll-out of highly sensitive molecular tests like Xpert MTB/RIF Ultra (Xpert Ultra), which can also detect drug-resistance to key TB drug rifampicin, and the launch of digital chest x-rays which can be interpreted by artificial intelligence (AI)-based software. Novel non-invasive sampling technologies are also accelerating, with tongue swabs and face masks under evaluation. These specimens may be easier and more acceptable to collect than sputum, the usual sample. Combining novel sampling approaches with sensitive molecular TB tests has great potential for finding missing TB cases, but research so far has focused on adults. There are minimal adolescent-specific data describing these new strategies' accuracy or acceptability, how they could be best deployed, and what happens after a positive TB diagnosis. Understanding demographic and clinical features of adolescents with TB will help design tailored interventions and strategies to find TB in adolescents.

The results of Dr MacLean's research project will be published in ARC's 2024 annual report.

