

## Trends in paediatric tuberculosis diagnoses in two South African hospitals early in the COVID-19 pandemic

**To the Editor:** In response to the COVID-19 pandemic, South Africa (SA) instituted a countrywide lockdown on 27 March 2020. The lockdown affected the ability of patients to access tuberculosis (TB) services,<sup>[1]</sup> resulting in an large decline in diagnostic TB Xpert testing.<sup>[2]</sup> TB screening and investigation are essential for preventive and therapeutic care for people living with HIV and to diagnose or rule out active TB.<sup>[3-6]</sup> In contrast to adults, hospital admissions of children with lower respiratory tract infections (LRTIs) decreased dramatically during the lockdown.<sup>[7]</sup> Moreover, sputum induction and gastric aspirate collection, essential to diagnose TB in children, are aerosol-generating procedures and were curtailed to reduce healthcare worker exposure to SARS-CoV-2.

We describe paediatric TB notification rates in two public sector academic hospitals, Chris Hani Baragwanath Academic Hospital (CHBAH) and Rahima Moosa Mother and Child Hospital (RMMCH), in Johannesburg, SA. Data from 2012 showed that LRTIs accounted for 60% of paediatric admissions, with 10% of these children being diagnosed with TB at CHBAH.<sup>[8]</sup> We analysed routinely collected hospital admission and TB notification data in children aged 0 - 10 years over a 33-month period from January 2018 through September 2020 to evaluate the early impact of the pandemic on paediatric TB diagnosis.

The median (interquartile range (IQR)) number of children admitted to each of the two hospitals per month was significantly lower during the COVID-19 lockdown period (252 (202 - 316)) compared with previous months before the lockdown (705 (485 - 826)) ( $p < 0.0001$ ) (Table 1). A total of 800 children (649 at CHBAH and 151 at RMMCH) were diagnosed with TB over the 33-month period. During the 27-month pre-COVID-19 period, there were a median (IQR) of 14 (5 - 25) paediatric TB notifications per month, compared with 3 (2 - 4) ( $p = 0.0003$ ) during the COVID-19 lockdown period (Table 1). However, median TB notification rates per 1 000 paediatric admissions did not differ significantly between the pre-COVID and COVID periods (18/1 000 v. 10/1 000, respectively).

The decline in monthly TB notifications we report is unlikely to be explained by less TB transmission as a result of adult mask wearing

and severe restrictions on social mixing, especially as TB notification rates in children admitted to hospital remained stable. However, both the influenza and respiratory syncytial virus seasonal peaks in incidence had not yet been observed in SA in 2020, suggesting that non-pharmaceutical interventions do interrupt droplet pathogen transmission.<sup>[9]</sup> Alternatively, the lockdown may have reduced child acquisition of TB in non-household settings, where it is posited that most TB transmission takes place.<sup>[10]</sup> Conversely, delayed diagnosis or interrupted TB treatment in adults could increase the risk of TB exposure for children in their households, leading to higher TB transmission. It is more likely that hard barriers, or caregiver reluctance, to access routine health services during the pandemic better explain declines in paediatric admissions and TB notification rates. As the SA lockdown eases, an increase in TB notifications is expected, potentially with more severe manifestations likely to be due to delayed TB diagnoses in adults.

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**Table 1. New TB notification rates, before and during the COVID-19 lockdown, in children aged 0 - 10 years admitted to two public hospitals in Johannesburg, South Africa, between January 2018 and September 2020**

Variables	Pre-COVID-19 lockdown, median (IQR)	During COVID-19 lockdown, median (IQR)	p-value
Monthly hospital admissions			
Overall	705 (485 - 826)	252 (202 - 316)	<0.0001*
CHBAH	818 (767 - 920)	310 (260 - 316)	0.0002*
RMMCH	485 (436 - 620)	218 (215 - 315)	0.0002*
Monthly TB notifications			
Overall	14 (5 - 25)	3 (2 - 6)	0.0003*
CHBAH	25 (20 - 29)	4 (2 - 8)	0.0003*
RMMCH	5 (3 - 6)	3 (2 - 3)	0.0284
Monthly new TB notifications/1 000 admissions			
Overall	18 (9 - 29)	10 (6 - 20)	0.2123
CHBAH	28 (25 - 33)	16 (6 - 36)	0.2301
RMMCH	9 (7 - 12)	9 (6 - 14)	0.2823

TB = tuberculosis; IQR = interquartile range; CHBAH = Chris Hani Baragwanath Academic Hospital; RMMCH = Rahima Moosa Mother and Child Hospital.  
\*Statistically significant at the 0.05 level.

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