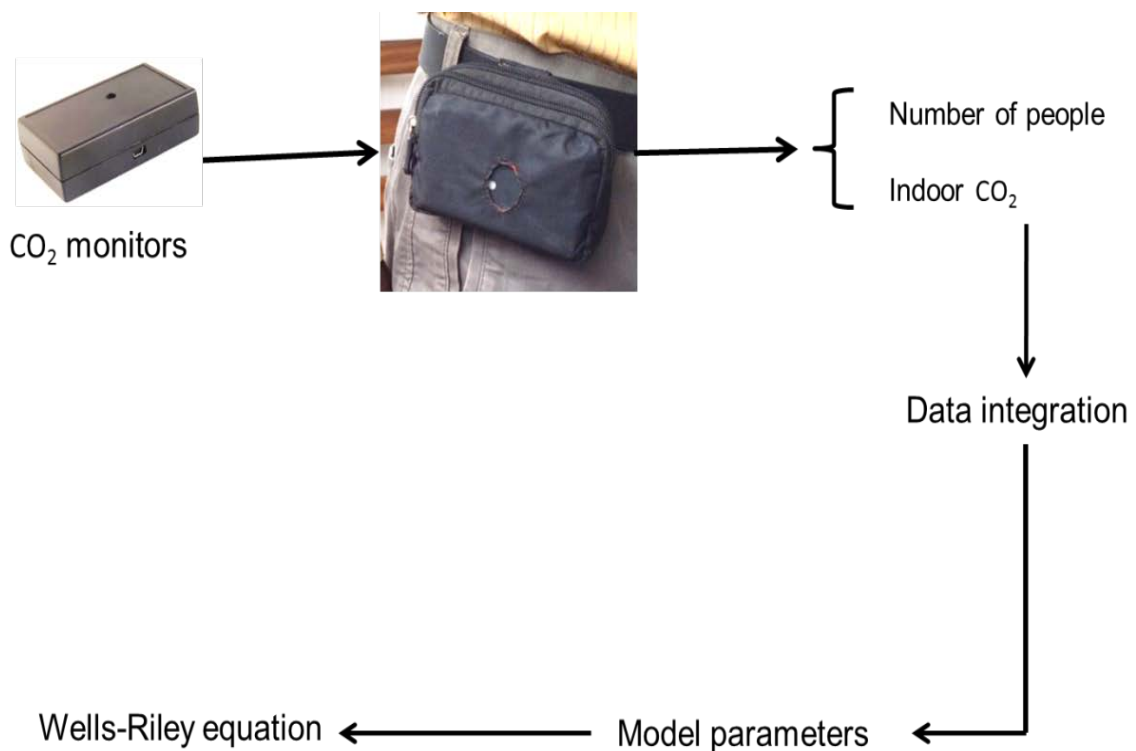


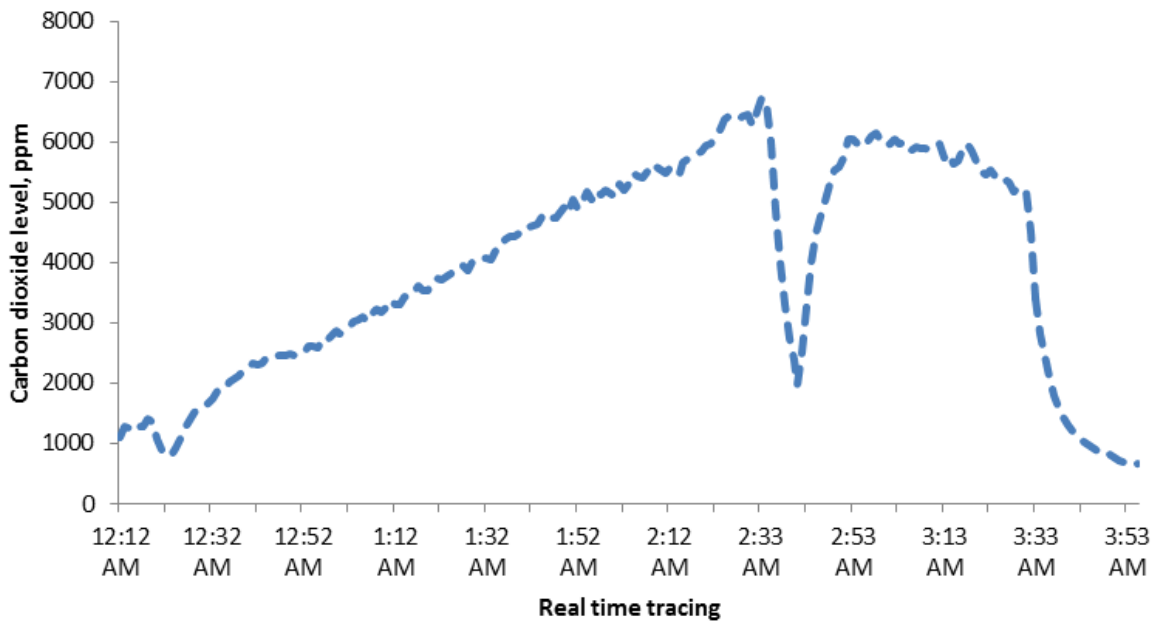
SUPPLEMENTARY INFORMATION

Supplementary Figure 1. Work flow for data collection and parameterization.

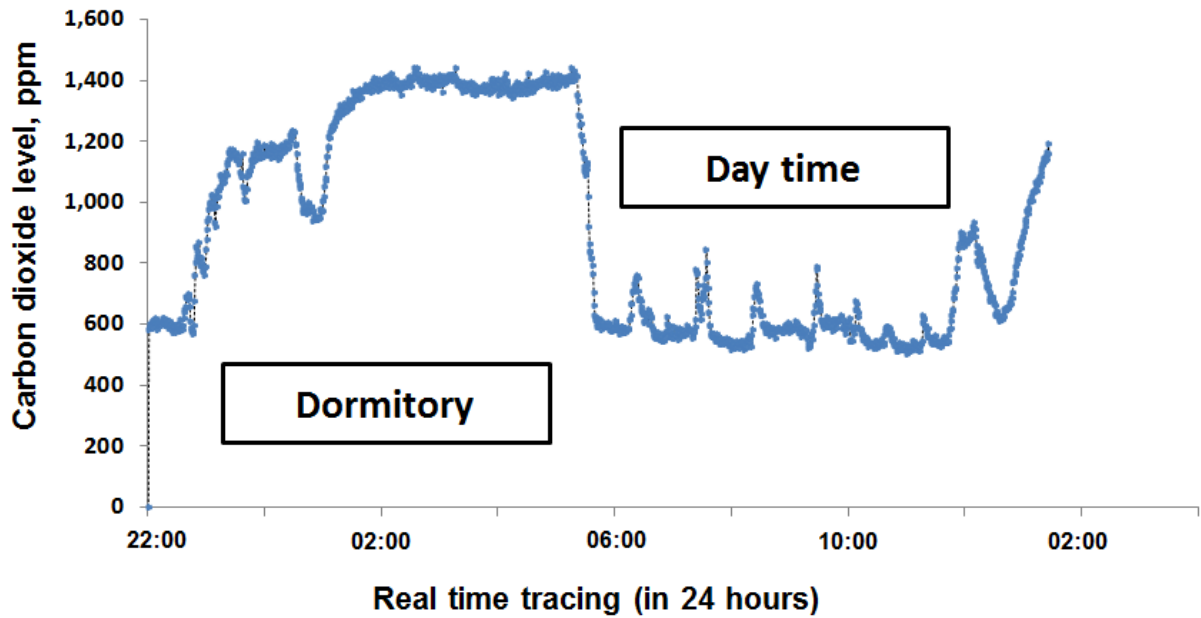
Methods used for data collection and parameterization of the modified Wells-Riley equation. Briefly, participants carried the Carbon dioxide (CO₂) monitors and documented the number of people in paper diaries. CO₂ data and social contact data were then integrated in an Microsoft Access database. Parameterization was done using previously published results (1–3). See also Equations 1 (a-c) and Supplementary Table 1.



Supplementary Figure 2. Ventilation conditions from a nightclub in Dar es Salaam. A real-time plot of carbon dioxide levels (y-axis) in parts per million (ppm) over time (x-axis) in 24 hours within a nightclub. The plot shows poor ventilation condition (>1,000 ppm) past midnight when the number of night club attendees increases. The sharp trough at 2.30 am to 2.50 am correspond to the time when the volunteer went outside before going back to the night club.



Supplementary Figure 3. Ventilation conditions at a college in Dar es Salaam. A real-time plot of carbon dioxide levels in parts per million (ppm) over time from one college (students aged between 18 and 22 years) showing good ventilation conditions during day in the class rooms with open windows, but poor ventilation conditions in a dormitory during the night.



Supplementary Table 1. Parameters used to estimate TB transmission in Dar es Salaam.

Parameter description	Value	Reference(s)
Infectious quanta (<i>q</i>)		
Smear-positive TB patient (average)	1.25 q/hour	4
Smear-positive TB patient co-infected with HIV	5.5 q/hour	2
Smear-positive TB patient co-infected with HIV (average)	8.2 q/hour	2,4
Estimated from an office building	12.7 q/hour	1
Infectious individuals in space (<i>I</i>)		
TB notification rate from NTLP	142/100,000 people	5
TB prevalence from NTLP	295/100,000 people	6
TB prevalence estimates from WHO	528/100,000 people	7
One smear-positive patient	1 per location	-
Time spent in each location (<i>t</i>)	Varying by location	This study
Number of contacts at each time point (<i>n</i>)	Varying by location	This study
Rebreathed fraction (<i>f</i>)	Varying by location	This study

NTLP, National Tuberculosis and Leprosy Programme; TB, tuberculosis; WHO, World Health Organization

REFERENCES

- 1 Nardell Edward A, Keegan Joann, Cheney Sally A, Etkind Sue C. Airborne Infection: Theoretical Limits of Protection Achievable by Building Ventilation. *Am Rev Respir Dis* 1991;**144**(2):302–6.
- 2 Escombe A Roderick, Moore David AJ, Gilman Robert H, Pan William, Navincopa Marcos, Ticona Eduardo, et al. The infectiousness of tuberculosis patients coinfecting with HIV. *PLoS Med* 2008;**5**(9):1387–96. Doi: 10.1371/journal.pmed.0050188.
- 3 Andrews Jason R, Morrow Carl, Walensky Rochelle P, Wood Robin. Integrating Social Contact and Environmental Data in Evaluating Tuberculosis Transmission in a South African Township. *J Infect Dis* 2014:1–7. Doi: 10.1093/infdis/jiu138.
- 4 Andrews Jason R, Morrow Carl, Wood Robin. Modeling the role of public transportation in sustaining tuberculosis transmission in South Africa. *Am J Epidemiol* 2013;**177**(6):556–61. Doi: 10.1093/aje/kws331.
- 5 Ministry of Health and Social Welfare. *National Tuberculosis and Leprosy 2013 Annual Report*. 2014.
- 6 Ministry of Health and Social Welfare. *First Tuberculosis Prevalence Survey in the United Republic of Tanzania*. 2013.
- 7 World Health Organization. *Global Tuberculosis Report 2015*. 2015.