Medical Xpress

New method may allow country-level real-time surveillance of drug-resistant tuberculosis

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Global tuberculosis control and elimination will require detailed real-time information on the location of individuals with the disease, the presence of drug resistance, and the patterns of transmission. The surveys currently used are only conducted periodically and are not sufficient to effectively control tuberculosis, which causes more than

4,500 deaths daily. This week in *PLOS Medicine*, Karen Jacobson, from the Boston University School of Medicine and Boston Medical Center, and colleagues, describe a new technique for linking samples submitted for tuberculosis testing to the individuals who provided the samples and the location from where they were submitted, in a way that can provide the continuous national surveillance necessary for eradicating tuberculosis and drug-resistant tuberculosis.

Using a person-matching algorithm to link repeat and longitudinal specimens to the same individual and to the same episode of disease, the researchers linked 2,219,891 samples from the Western Cape National Health Laboratory Service in South Africa, submitted for tuberculosis testing between 2008 and 2013, to 799,779 individuals who were mappable to clinic locations. Of these individuals, 222,735 (27.8%) had microbiologically confirmed tuberculosis, and of these, 10,255 (4.6%, 95% CI: 4.6-4.7) had documented resistance to the drug rifampicin. The researchers found that the percentage of rifampicin-resistant (RR-) tuberculosis cases was spatially heterogeneous, ranging from 0% to 25% across the province, and that the percentages of RR-tuberculosis fluctuated from year to year at several locations.

The researchers note that because the South African database lacks unique identifiers, these figures are approximations that are reliant on the person-matching algorithm, and that the analysis does not include data from non-clinic locations or private clinics. Still, this method for leveraging routinely collected laboratory data is a promising tool for understanding and eliminating tuberculosis.

As the authors note: "In the future, this framework could allow public health providers to have near real-time surveillance of drug resistance burden, evaluate programmatic interventions, and monitor progress towards national and global tuberculosis reduction goals."

More information: McIntosh AI, Jenkins HE, White LF, Barnard M, Thomson DR, Dolby T, et al. (2018) Using routinely collected laboratory data to identify high rifampicin-resistant tuberculosis burden communities in the Western Cape Province, South Africa: A retrospective spatiotemporal analysis. *PLoS Med* 15(8): e1002638. doi.org/10.1371/journal.pmed.1002638

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