

Abstracts' Service

High degree of fluoroquinolone resistance among pulmonary tuberculosis patients in New Delhi, India

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Background and objectives. The fluoroquinolones (FQs) group of antibiotics is the backbone drugs for the management of drug-resistant tuberculosis (TB). In routine clinical practice, drug susceptibility testing (DST) for FQs is not performed, and the patients are empirically treated. A limited information exists regarding FQs resistance among pulmonary TB cases. The present study was conducted to determine the FQs resistance among drug sensitive and drug-resistant pulmonary TB patients in a tertiary care centre in north India.

Methods. A total of 1619 sputum/smear-positive specimens of pulmonary TB patients were subjected to DST for first-line drugs (FLDs) and second-line drugs. In addition, FQs DST was also performed using automated Mycobacterial Growth Indicator Tube-960 liquid culture technique. The immuno-chromatographic assay was performed to

distinguish *Mycobacterium tuberculosis* complex (MTBC) from non-MTBC.

Results. *Mycobacterium tuberculosis* (*Mtb*) was isolated in 1499 sputum specimens; 1099 culture specimens were sensitive to FLDs, 249 grew as multidrug-resistant (MDR) *Mtb* and the remaining 151 isolates revealed any drug resistance to FLDs. While FQs monoresistance among the FLD sensitive isolates was 3.1 per cent (35/1099), 27.3 per cent (68/249) among MDR *Mtb* isolates had additional FQs resistance.

Interpretation and conclusions. FQs resistance among drug sensitive and MDR *Mtb* isolates was high in Delhi, India. Based on these findings, it is recommended that the DST for FQs should be routinely performed to avoid further amplification of drug resistance.

Completeness of death registration in the Civil Registration System, India (2005 to 2015)

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Background & objectives. In many developing countries including India, the civil registration data are incomplete, inadequate and not timely, therefore, compromising the usefulness of these data. The completeness of registration of death (CoRD) in the Indian Civil Registration System (CRS) was assessed from 2005 to 2015 at State level to understand its current status and trends over time and also to identify gaps in data to improve CRS data quality.

Methods. CoRD for each year for each State was calculated from the CRS reports for 2005-2015. Data were analyzed nationally by geographic region and individual State. The availability of CoRD by age group and sex was also reported.

Results. About 40 per cent increase in CoRD was documented for India between 2005 and 2015, with CoRD of 76.6 per cent in 2015. CoRD was >90 per cent in the western and southern regions and the eastern, central and northeastern regions had CoRD lower than the Indian average in 2015. Among the 29 States, 16 (55.2%) States had CoRD >80 per cent and five (17.2%) <50 per cent and 10 States recorded 100 per cent CoRD. Despite the highest

per cent increase during 2005-2015 (108.5%), CoRD in Uttar Pradesh was 44.2 per cent in 2015. Varying levels of progress in 2015 were seen between the States with similar CoRD estimates in 2015. Nagaland (-63.3%), Manipur (-33.1%) and Tripura (-30.3%) were the only States that documented a decrease in CoRD during 2005-2015. The age non-availability for India ranged from 37.0 per cent in 2009 to 37.9 per cent in 2015, an average of 41.5 per cent over the seven years and was an average of 35.6 and 36.6 per cent for males and females, respectively. Age was available for all registered deaths only in five (17.2%) of the 29 States in 2009 and four (13.8%) in 2015. Sex non-availability for the recorded deaths was much lower as compared with that for age.

Interpretation and conclusions. Despite the significant progress made in CoRD in India, critical differences between the States within the CRS remain, with poor availability of reporting by age and sex. Concentrated efforts to assess the strengths and weaknesses at the State level of the CRS processes, quality of data and plausibility of information generated are needed in India.

Molecular characterization of influenza A(H1N1) pdm09 viruses circulating at various geographical locations in India, 2017

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Background & objectives. Influenza virological surveillance is an essential tool for the early detection of novel genetic variants of epidemiologic and clinical significance. This study was aimed to genetically characterize A(H1N1)pdm09 virus circulating in 2017 and to compare it with the global data.

Methods. The regional/State Viral Research and Diagnostic Laboratories (VRDLs) provided influenza diagnosis for referred clinical samples and shared influenza A(H1N1)pdm09 positives with the Indian Council of Medical Research-National Institute of Virology (ICMR-NIV), Pune, India, for hemagglutinin (HA) gene phylogenetic analysis. Sites at Manipal, Jaipur and Dibrugarh performed the sequencing and shared the sequence data for analysis. The antiviral susceptibility of influenza viruses was assessed for known molecular marker H275Y at the ICMR-NIV, Pune.

Results. All the eight VRDLs had well-established influenza diagnostic facilities and showed increased

activity of influenza A(H1N1)pdm09 during 2017. Phylogenetic analysis showed that the viruses from the different regions of the country were similar to A/Michigan/45/2015 strain which was the 2017-2018 recommended vaccine strain and were clustered with the globally circulating clade 6B.1 with signature mutations S84N, S162N and I216T. The clade 6B.1 showed further subgrouping with additional mutations S74R, S164T and I295V; however, there was no significant association between the presence of these mutations and severity of disease due to influenza. All the study viruses were sensitive to oseltamivir.

Interpretation and conclusions. During the study period, all the study sites reported globally circulating A/Michigan/45/2015 vaccine strain of influenza A(H1N1)pdm09 viruses and remained sensitive to oseltamivir. Further genetic and antigenic characterization of influenza viruses is recommended to address public health concerns.