

TITLE: Clinical and Public Health Implications and Challenges of XDR-TB Management

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INTRODUCTION:

Between 2008 and 2015 there were 822 people found to have multidrug resistant tuberculosis (MDR-TB) and 18 people found to have extensively drug resistant tuberculosis (XDR-TB) with treatment of the latter costing ~1 million per person. While XDR-TB is a rare phenomenon here in the United States, when identified, it comes with significant challenges at the clinical and public health level.

CASE DESCRIPTION:

26 yo male contract engineer residing in New Orleans, LA presented to a private hospital for evaluation of persistent nonproductive cough for over a month. Imaging demonstrated a right upper lobe cavitory lesion and bilateral supernumerary nodules. The patient had previously been treated in 2014 for pulmonary mycobacterium tuberculosis (MTB) in Gujarat, India with a 4-drug regimen over 9 months. Six months prior to his current evaluation he was in California as a Masters student and underwent treatment with two courses of antibiotics for presumed pneumonia. The patient underwent bronchoscopy in New Orleans which revealed smear negative with culture positive MTB reported three weeks later. Despite being started on first line MTB treatment at the initial point of care, the patient's symptoms worsened while on therapy and he was referred to the Wetmore TB Clinic where sputum results 24 hours later demonstrated 3+ positive smear, nucleic acid amplification test (NAAT) positive for MTB. Molecular testing for drug resistance demonstrated findings consistent with XDR-TB later confirmed by drug susceptibility testing with some discordance. Due to patient's family reasons, he transferred to a hospital in Illinois where he was cared for in isolation for over 4 months with intensive WHO Group IV-V regimen including Bedaquiline that was started in conjunction with the consultation of local, regional and CDC reference centers. Tolerance and side effects of medications notwithstanding, the patient did well and converted after about 5 months of therapy. Concomitantly, a rigorous two-step screening process for 50 high-risk office contacts in New Orleans was undertaken. Two contacts were diagnosed with MTB infection.

DISCUSSION:

This case highlights the need for increased awareness of MDR-TB and XDR-TB in migrant populations not entering through regular immigrant channels. A variable threshold of screening is employed for non-immigrant workers. Discordance may exist between standard drug sensitivities and molecular drug resistance testing. The intensive treatment of XDR-TB requires close coordination between primary physicians, consultants, reference labs and public health officials. It also reinforces the challenges associated with treatment of contacts and the limited options available.