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Macrolide susceptibility of *Bordetella pertussis* in the United States, 2011-2015

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Although rare, macrolide resistance in *Bordetella pertussis* has been reported in some countries more frequently since 2012. We evaluated current U.S. B. pertussis isolates for susceptibility to erythromycin and azithromycin and optimized a PCR assay for testing erythromycin resistance directly on nasopharyngeal specimens (NPS). 1208 *B. pertussis* isolates collected 2011-2015 from 7 states with enhanced pertussis surveillance, 2 states with large pertussis outbreaks, and 6 states with sporadic cases were tested for susceptibility to erythromycin and azithromycin by disk diffusion. Plates were incubated for 7 days to check for the heterogeneous resistance phenotype. In addition, 54 DNA NPS extracts from 6 states were tested by a PCR targeting the V domain of the 23S rRNA gene, which harbors the A2047G mutation conferring macrolide resistance. PCR primers were designed using the Chinese *B. pertussis* vaccine strain as a reference. Two PCR reactions were performed for each DNA extract allowing for the identification of susceptibility patterns by gel electrophoresis. All isolates were susceptible to both macrolides, with zones of inhibition of at least 45 mm after 3 days. No isolates produced the heterogeneous phenotype after 7 days. Out of the 54 DNA extracts tested, 48 were erythromycin susceptible by PCR. Six DNA extracts yielded no PCR products, attributed to DNA degradation or poor specimen quality. No DNA extracts harbored the mutation that confers macrolide resistance. Although macrolide resistance in *B. pertussis* does not appear to be a current problem in the U. S., systematic monitoring is crucial. Testing NPS by PCR will allow us to quickly identify resistant cases whether or not an isolate is available..

Biography

Brunilís Burgos-Rivera completed her PhD in Genetics from the University of Georgia in 2012. Currently, she is a microbiologist at the Pertussis and Diphtheria Laboratory at the Centers for Disease Control and Prevention (CDC) working as a contractor. She has served as the Laboratory Coordinator for the Latin American Pertussis Project, a collaboration between CDC, Sabin Vaccine Institute, Pan American Health Organization, and the Ministries of Health in select Latin American Countries to strengthen pertussis surveillance and diagnostics in the Region. More recently, she has been selected as a Fellow to the CDC Laboratory Leadership Service, Class of 2016..

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