Presentation Type:
Poster Presentation

Antimicrobial Susceptibility of *Bordetella pertussis* Isolates in Southern Vietnam During 2015–2017

Hoan T. Pham, Pasteur Institute Ho Chi Minh City; Anh H. V. Nguyen, International University–Vietnam National University Ho Chi Minh City; Cao Huu Nghia, Pasteur Institute in Ho Chi Minh City

Background: Pertussis continues to be an important health issue in Vietnam despite infant vaccination programs. In Vietnam, the incidence rates of pertussis per 100,000 population rose from 0.09 in 2014 to 0.33 in 2015 and to 0.58 in 2017. Macrolides, especially erythromycin, are the treatment of choice. However, erythromycin-resistant cases, caused by transition at A2047G position in 23S rRNA, have been reported in the region. Few data are available on antimicrobial resistance in *Bordetella pertussis* to guide treatment in Vietnam. We report antimicrobial susceptibility of the circulating strains in southern Vietnam during 2015–2017. **Methods:** Tracheal aspirates from 263 suspected pertussis cases were subject to multiplex real-time PCR to identify *B. pertussis* and *Bordetella* spp. Samples were cultured on Regan Lowe agar with 10% sheep blood containing cephalexin (40 μg/mL) and incubated at 37°C for 10 days. The antimicrobial susceptibilities to erythromycin, azithromycin, clarithromycin, and trimethoprim/sulfamethoxazole were determined using the disc diffusion method (CLSI-2017) on Regan Lowe and Mueller Hinton agar. Erythromycin minimum inhibitory concentrations (MICs) were determined using an E-test. The results were recorded after days 3 and 7 of incubation. Sequencing of the 23S rRNA gene was performed to detect mutations conferring macrolide resistance. **Results:** Of 263 cases, 119 were positive for *B. pertussis* (45.2%) by real-time PCR, and 15 of 263 strains (5.7%) were successfully cultured. All 15 isolates were susceptible to macrolides and no heterogeneous phenotype was recorded after 7 days; erythromycin MICs were ≤0.094 μg/mL (Fig. 1). We observed no difference in results generated on Regan Lowe and Mueller Hinton media. However, for testing trimethoprim/sulfamethoxazole, results on were superior, as those on Regan Lowe media were unclear. Sequencing of 23S rRNA identified no mutations known to confer macrolide resistance. **Conclusions:** None of 15 *B. pertussis* isolates tested were nonsusceptible to erythromycin and macrolides. Similarly, no mutation at the erythromycin-binding site in the 23S rRNA gene was identified. The low isolation rate of *B. pertussis* by culture means that few positive specimens were tested for antimicrobial susceptibility. To overcome this limitation, detection of resistance directly from clinical specimens needs to be investigated. Ongoing screening for *B. pertussis* and antimicrobial susceptibility is recommended to support efforts to control the spread of this respiratory tract infection agent.

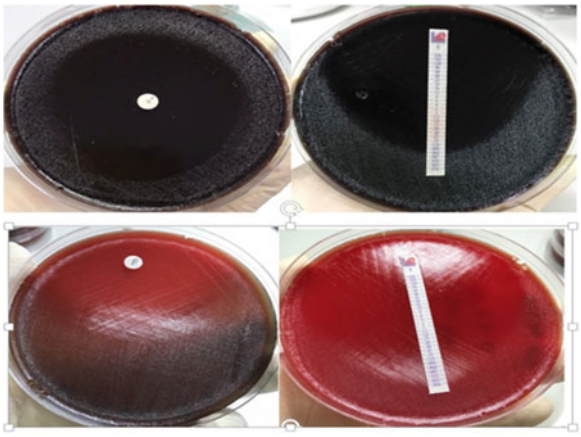

Fig. 1.

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Application of an Outpatient CLABSI Surveillance Definition: Results and Lessons From 7 Infusion Clinics

Keenan Williamson, Oregon Health & Science University; Chad Douglas Nix, Oregon Health & Science University; Molly Hale, Oregon Health & Science University

Background: The NHSN does not have a published surveillance definition for central-line–associated bloodstream infections (CLABSIs) related to healthcare in ambulatory settings. With the increasing reliance on services involving central-line care in the ambulatory setting, there is opportunity to improve healthcare performance by developing standardized surveillance. **Methods:** Chart review was performed on 320 patients who had a visit at an infusion clinic and a positive blood culture in 2018. A qualifying infusion clinic visit involved accessing of the central line during the encounter. Ambulatory-associated cases were defined as having a qualifying infusion clinic encounter within 7 days prior to blood culture collection. Cases were excluded if the patient's central line had been accessed in an inpatient setting between the positive blood culture and infusion clinic visit. All other criteria were based on the NHSN inpatient CLABSI case definition. **Results:** Application of the proposed surveillance definition revealed 17 of 320 (5.3%) patients who met criteria for an ambulatory CLABSI. All 16 patients who met criteria (94%) had an inpatient hospital stay within 7 days of the qualifying infusion clinic encounter, for an average of 8.8 hospital days (range, 2–20). Positive blood cultures were collected on average 3.2 days after the patient's qualifying infusion clinic encounter (range, 0–7). Moreover, 20 causative organisms were identified: 6 common commensals, 2 *Staphylococcus aureus*, and 12 gram-negative bacteria. Also, positive blood cultures for 7 patients (41%) were collected in ambulatory clinics. Patients reported symptom onset on average 1.2 days prior to telling a healthcare professional (range, 0–5) and an average of 2 days from their last qualifying infusion clinic visit (range, 0–6). In addition, 1 patient (6%) met for a site-specific infection outside of the defined window period during their subsequent admission. **Conclusions:** Application of the surveillance definition resulted in the identification of 17 CLABSIs. These results highlight important limitations in ambulatory CLABSI surveillance: Patients who access emergency services closer to their residence may have had their bloodstream infection (BSI) identified elsewhere. Ensuring comprehensive interfacility communication would increase the value of an institution's surveillance. Additionally, ambulatory surveillance for BSI should include all possible collection locations. Although subject to recall bias, the event date could be based on symptom onset to allow for variation in healthcare-seeking behavior. In the ambulatory setting, because diagnostics are not readily available, delayed diagnosis of site-specific infections could result in an inflated ambulatory CLABSI rate.

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