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Can rapid molecular influenza diagnostic assays contribute to decrease antibiotic treatment duration ?

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Background: Widespread antibiotic (ATB) use in the treatment of hospitalized patients contributes to the selection of antibiotic-resistant bacteria and it is actually considered as a main public health problem. The ATB overuse remains common with approximately 30% of useless ATB-days. Respiratory tract infections (RTIs), particularly those caused by influenza viruses are a target for drastic limitation of antibiotherapy. Rapid molecular methods are now recommended and routinely performed for the diagnosis of RTIs. The aim of this study was to evaluate, the impact of an on-demand molecular test on antibiotic consumption decrease in the absence of bacterial RTIs.

Material/methods: Between November 2015 and March 2016, a prospective study was conducted among hospitalized adult patients in our institution. Diagnosis of influenza viruses A and B (FluA and FluB) and respiratory syncytial virus (RSV) was performed on nasopharyngeal aspirates by Xpert® Flu/RSV XC (Cepheid), a rapid automated RT-PCR assay. This test requires only 1 min of hands-on-time and results are available within 63 minutes. Clinical data, antibiotic use and the serum procalcitonin (PCT) levels were also collected.

Results: A total of 333 respiratory samples were tested by Xpert Flu/RSV XC, which detected 57 positive results: 25 FluA, 18 FluB and 14 RSV. Clinical data and/or PCT levels were not available for 6 patients. For the remaining 51 patients, 35 were initially treated by ATB from whom 19 (54.3 %) had a PCT value < 0.5 μg/mL. Among these 19 negative PCT patients, only 4 (21 %) had an abnormal X-ray. Even without bacterial documentation, 11 patients (57.9%) continued to receive antibiotics.

Conclusions: The majority of patients with influenza infections (61.4%) received ATB at admission. For 54.3% of them, ATB treatment was inappropriately maintained while there was no evidence of bacterial infection. The rapid turnaround time of Xpert Flu/RSV XC is an opportunity to improve the management of viral RTIs and to avoid unnecessary antibiotherapy in the absence of a bacterial co-infection. Since this study, a systematic intervention program based on an algorithm using clinical data, the PCT value and the XpertFlu/RSV results has been implemented in our hospital.