

Session: P070 Update on respiratory viruses

Category: 1c. Influenza and respiratory viruses

24 April 2017, 13:30 - 14:30
P1402

Economic impact of the use of Alere-i influenza A&B screening for the management of influenza infections in adults attending the emergency department during winter 2015-2016 in Lyon, France

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Background: The rapid and accurate detection of influenza virus in respiratory specimens is required for optimal management of patients with acute respiratory infections. We hypothesized that the rapid influenza diagnostic tests Alere i Influenza A&B isothermal nucleic acid assay, by detecting influenza at the point of care, has the potential to reduce unnecessary antibiotic use, laboratory tests and hospitalizations, and facilitate patient management (i.e. isolation).

Material/methods: During winter 2015-2016, we prospectively evaluated the impact of the systematic rapid screening of adult patients presenting with Influenza Like Illness at the emergency department of the Croix-Rousse Hospital, Lyon. Briefly the Alere i Influenza A&B assay was done alternately 1 day out of 2 for all patients presenting with ILI. Subsequently, we compared the costs and outcomes obtained by the 2 different testing strategies for detection of influenza: (1) a conventional multiplex

PCR detection (MWS r-gene™, BioMérieux, Lyon, France) in the virology laboratory (delay of response 6 to 18h); (2) Alere i Influenza A&B assay carried out on site followed by the conventional multiplex PCR detection. Positive samples were subtyped according to the protocol from the National Influenza Center (Lyon, France) to determine if the use for the specific detection of influenza at the point of care has an impact on the cost or the management of influenza confirmed cases.

Results: Between the 17th of February and 11th of April 2016, 116 Patients were included with a M/F ratio of 1. The mean age was 60. Amongst the 116 patients, 60 (51.7%) were in the Alere-i influenza A&B rapid test group (ART) vs 56 (48.3%) in the Conventional Multiplex PCR group (MCP). Influenza was detected in 31 patients; 20 in the MCP group and 11 in the ART group. When influenza was diagnosed, the patients were less frequently admitted to the hospital (35.5% vs 64.5%). Only 1 patient received antibiotics, in the MCP group. There was no statistical difference between the cost of biological and radiological analysis between the two groups. However, the hospital stay between arrival and discharge from emergency, including short-term hospitalization unit, was shorter for the ART patients as compared to MCP cases (13.42 d +/-2.7 vs 19.27 +/- 2.1, respectively). Overall, when comparing the median cost of each strategy, the cost of the ART strategy was lower than this of the MCP strategy.

Conclusions: Our study shows that the screening of influenza in the emergency department using rapid testing through the Alere-i influenza A&B assay seems to be a relevant strategy for optimizing the management of influenza in adults attending the emergency department. These results have to be confirmed by a medico-economic analysis.