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National patterns in the use of legionella urine antigen testing, United States, 2013-2016

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Background: Over the past 20 years, incidence rates of Legionnaires' disease (LD) have risen dramatically in the US, yet the precise reasons for this increase remain unclear. One explanation posited for this increase has been more widespread use of Legionella urinary antigen tests (LUAT) in the US. To date, however, there is a paucity of published information on the utilization of LUAT. The aim of this paper is to describe distribution patterns of a commonly used LUAT (BinaxNOW[®], Alere, Inc., Waltham, MA) in the U.S. and across the state of Michigan where LD cases have also risen.

Methods: Retrospective data from January 1, 2013-December 31, 2016 were provided by Alere, Inc. Using IBM SPSS (v24), univariate and bivariate analysis were performed to describe the distribution of the BinaxNOW[®] LUAT by year, month, state, city, county and zip code. County-specific data for Michigan were available and analyzed for the years 2015-2016. We estimated test utilization rates using population census (2016) data to compare over time by geographic area.

Results: From January 2013-December 2016, the distribution of the LUAT was consistently higher in Texas, Pennsylvania, New York, Minnesota, and Florida compared with other states (Fig. 1). In 2016, New York state received the greatest number of tests (n=72,072), followed by New Jersey (n=66,396), Illinois (n=55,946), Texas (n=54,824) and Florida (n=52,932). In Michigan during 2013, 15,378 LUAT were received and this number rose to 23,232 in 2014, 25,212 in 2015, and 29,920 in 2016. In Michigan during 2015-2016, the counties of Genesee (n=9988), Oakland (n=6930), and Wayne (n=20350) had higher test utilization compared with other Michigan counties (Fig. 2 and 3).

Conclusions: Overall, 68% of LUAT were provided to institutions in ten states and year-by-year analysis suggests a rising trend in LUAT usage. These results suggest that there may be changes in diagnostic practice and/or increasing awareness of LD as a cause of lower respiratory tract disease. Further research is needed to understand detailed trends and public health implications in the use of LAUT compared with other diagnostic modalities (e.g., bacterial culture) for LD diagnosis.

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