Workflow Evaluation of the Luminex® NxTAG™ Respiratory Pathogen Panel (RUO)

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INTRODUCTION

The Luminex® NxTAG™ Respiratory Pathogen Panel (NxTAG RPP) (RUO) is a new multiplexed molecular assay for detection and differentiation of 19 viral and 3 bacterial pathogen nucleic acids from extracted respiratory specimens. After nucleic acid extraction, an aliquot is added directly to pre-plated lyophilized reagents and multiplexed RT-PCR and bead hybridization are carried out in a single thermal cycling program in a closed PCR plate. Upon completion, the plate is transferred to the MAGPIX instrument for reading, data analysis, and results reporting. In this study, we performed a preliminary evaluation of the workflow of NxTAG RPP as compared to our currently used method, the Luminex xTAG® Respiratory Viral Panel (RVPv1).

METHODS

For evaluation of workflow, 24 samples were selected as representative of a typical run size and tested by both methods. Each step of the assay procedure, from sample acquisition to final result, was observed and the data collected include: number of steps, number of manual interventions, hands-on time, and total time.

RVP V1 WORKFLOW

Extraction →  RT-PCR →  EXO/SAP →

 

TSPE → Bead Hybridization → 

Detection and Analysis

RPP WORKFLOW

Extraction →  Multiplex PCR and Hybridization → 

Detection and Analysis

RESULTS

NxTAG RPP had 6 total fewer steps and 5 fewer manual interventions as compared to RVPv1. The hands- on time was 22 minutes for NxTAG RPP as compared to 1 hour 13 minutes for RVPv1 and the total time for NxTAG RPP as compared to RVPv1 was 3 hours 44 minutes vs. 7 hours 34 minutes, respectively. The steps and time required from sample acquisition to extracted nucleic acid are identical for both assays. However, from PCR set-up to reported result, NxTAG RPP required 6 fewer steps, 51 minutes less hands-on time, and 230 minutes less total time than RVPv1.

CONCLUSIONS

The workflow is significantly improved in NxTAG RPP with only 6 manual steps versus 11 manual steps with the current RVPv1. The hands-on time is reduced from RVPv1 to RPP allowing more batches to be performed and reported in an 8 hours shift. By having RPP results available sooner to clinicians this can greatly decrease the length of stay for patients. Therefore impacting the entire institution where this is implemented.

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