

## RT-PCR multiplex syndromic testing – the key tool to differential diagnosis

Clinical microbiology has experienced significant changes due to new technologies that have improved the diagnosis of infectious diseases. These innovations include multiplex RT-PCR assays that simultaneously detect and identify multiple pathogens associated with clinical syndromes, such as respiratory, gastrointestinal (GI), or central nervous system (CNS) infections. These multiplex RT-PCR assays are revolutionary. They enable health care providers to obtain a rapid differential aid in diagnosis for the observed syndromes, allowing clinical management decisions (e.g., hospital admission, isolation, and antimicrobial treatment or lack thereof) to be made in a timely manner (1).

### Multiplex RT-PCR testing for the next respiratory season – beyond COVID-19

For upper respiratory infections or ILI (influenza-like-illness) syndrome, the clinical presentation may be nonspecific, with different pathogens showing overlapping signs and symptoms (including SARS-CoV-2). The use of multiplex RT-PCR panels to simultaneously detect and identify respiratory pathogens provides the key differential aid in diagnosis to simplify testing algorithms and improve the sensitivity and speed to provide the targeted therapy (2). In addition, multiplex RT-PCR tests may lead to the diagnosis of some infections that have been commonly missed due to a lack of clinical suspicion or available routine testing, like *Mycoplasma pneumoniae*.

This past respiratory season (2020-21), Influenza or RSV incidence has decreased significantly due to the social distancing and lock-down measures (3). However, some other respiratory viruses still have been detected at lower rates highlighting the importance of the diagnostic tools that allow multiple pathogen detection in specific patient populations. For example, rhinovirus and HMPV have been detected in patients with severe respiratory infections during the last winter months, taking over as the causative agent of bronchiolitis in children (4) or ICU admission in the elderly population (5), respectively.

In addition, COVID-19 patients have shown a variable rate of co-infections. These have been linked to higher severity and worse outcomes for COVID-19 patients showing rhinovirus, RSV, HMPV or *Mycoplasma pneumoniae* as the top pathogens in co-infection (6).

During the next respiratory season, it is predicted that relaxation of measures around preventing the COVID-19 pandemic, SARS-CoV-2 might become seasonal, and the other respiratory viruses might be back to pre-pandemic incidence rates (7). In such scenarios, RT-multiplex panels can deliver a precise differential aid in diagnosis to help provide optimal patient management decisions.

### QIAstat-Dx system as a syndromic testing solution

The QIAstat-Dx Analyzer is a syndromic testing solution that runs assay panels containing multiple related targets. Available panels include the QIAstat-Dx Respiratory SARS-CoV-2 Panel that detects 22 targets (including SARS-CoV-2) and the QIAstat-Dx Gastrointestinal Panel that detects 24 gastrointestinal pathogens. Planned for launch during 2021 is the QIAstat-Dx Meningitis/Encephalitis Panel. The QIAstat-Dx Analyzer, with QIASphere connectivity, includes up-to-date LIS bidirectional connectivity, 24/7 remote service and the possibility to check the instrument status and results from your phone, tablet or computer.



### References:

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**Webinar:** The clinical outcomes of using dry swabs for respiratory syndromic testing: Experience from a hospital in Paris

**Speaker:** Donia Bouzid, M.D., Ph.D., AP-HP, Bichat Claude-Bernard Hospital, Emergency Department, Paris, France

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