Supplementary Material

Validation of MRVP assay: The assay was validated in 2008, and field-tested in 2009.[8,9] During the validation phase, an initial sample of 240 clinical specimens from which respiratory viruses had been detected through conventional methods (DFA and culture) were tested blindly, and there was >99% agreement between conventional and RT-PCR testing. Subsequently, during the field testing phase, 400 clinical specimens were prospectively tested both by RT-PCR and DFA + viral culture. Respiratory viruses were detected in a greater number of clinical specimens when tested by RT-PCR, with the exception of Parainfluenza 2 and 3 where the field sensitivity of the mRT-PCR assay was 95% compared with culture. Additionally, 2 or more viruses (example: influenza and hMPV) were detected in 5% of clinical specimens by RT-PCR, whereas only one virus was identified by DFA+culture in these cases. Following those validation studies, the RT-PCR assay was implemented for routine diagnosis of respiratory infections in our center. Our laboratory undergoes yearly external quality and proficiency testing. The MRVP test is performed several times during the day (3-7 "runs" per day) during flu season.

Guidelines for Diagnostic Testing and Treatment During Influenza Season at the MUHC

At the MUHC, diagnostic testing during influenza season (the period of data collection) is recommended for all hospitalized patients with the suspected influenza-like illness (ILI) case definition (having fever or cough and one of the following: shortness of breath, sore throat, headache, myalgias, or weakness). Testing is also recommended for patients with the following risk factors or conditions: pregnant women, health care workers, or patients aged > 65 years old with diabetes, chronic cardiac/respiratory disease, cirrhosis, chronic renal failure, obesity, and/or immunocompromised condition.

Current guidelines for treatment at the MUHC recommend treating severe cases of Influenza or cases at risk for complications. During influenza season physicians may treat suspected cases of ILI empirically. In periods of outbreaks on a medical unit (3 related cases within 14 day period), all symptomatic are treated and all other asymptomatic patients will prophylactically be given oseltamivir and continue on it until the outbreak is declared over. Close contact(s) of a confirmed influenza patient may be offered prophylactic treatment as well.

Given the MRVP test result, appropriate post-test antiviral treatment is defined as follow: i) influenza positive patients to initiate or continue oseltamivir antiviral medication; ii) non-influenza positive patients to not be given oseltamivir or to suspend empiric oseltamivir treatment unless they are a close contact of a case or they are part of an outbreak; iii) patients negative on all virus types should not be given oseltamivir and empiric oseltamivir treatment should be suspended. We defined appropriate post-test antibiotic treatment as follow: i) test positive patients should not be given antibiotic and empiric antibiotic treatment should be suspended, unless a bacterial infection was suspected.