LAB NEWS

From the Department of Laboratory Medicine - Yale-New Haven Hospital Medical Center

Clinical Virology Laboratory Newsletter

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For Respiratory Viruses: PCR to Replace Most Viral Cultures

I. Respiratory Virus DFA tests available at YNHH:

Detailed below are the two respiratory virus DFA tests available at YNHH on inpatients or outpatients. These are the main tests employed. Time to result is 2 hrs from time of receipt in the lab during operating hours.

Respiratory Virus Screen DFA detects RSV, influenza A and B, parainfluenza types 1,2,3 and adenovirus. Sensitivity compared to culture is 93-99%, except for adenovirus (60%).
Human metapneumovirus (HMPV) DFA is also available and sensitivity is 85-95% of PCR. *HMPV DFA must be ordered separately* but can be done on the same sample as Respiratory Virus Screen DFA. Peak HMPV season is mid February to May.

II. Replacement of respiratory virus cultures with PCR

Until now, a reflex culture could be ordered on inpatients whose DFA was negative. Other than **adenovirus**, the recovery of viruses in culture from DFA-negative samples was low and took 2-10 days.

Individual PCR tests are available at YNHH for most respiratory viruses (see list on page 2). The Virology Lab has recently completed an evaluation of PCR as a replacement for culture on DFA-negative specimens. The yield of PCR compared to culture is greatest for **rhinovirus and HMPV**, as culture methods are insensitive for these two viruses**.** In order to hold down costs, yet increase positive virus detections and reduce the time to result, **the lab plans to replace culture with selected PCR tests** as described below*:*

III. New Tests (Implementation planned for late Dec-Jan, when tests will become available on SCM for ordering)

Respiratory Virus Screen DFA with reflex PCR (PCR will be canceled if DFA is positive).
Includes:

- DFA for RSV, influenza A and B, parainfluenza 1,2,3, adenovirus.
- *If DFA negative, reflex to adenovirus and rhinovirus PCR.*
- Additional PCR for a seasonal virus may be added by the lab (see page 2).

Use for hospitalized patients, if strong suspicion of virus infection

Respiratory Virus Lower Tract Panel (performed on endotracheal aspirates, BAL, bronchial washes, lung biopsies)
Includes:

- DFA for RSV, influenza A and B, parainfluenza 1,2,3, adenovirus.
- Adenovirus and rhinovirus PCR.
- CMV and HSV culture.
- Additional PCR for a seasonal virus may be added by the lab (see page 2).

For seriously ill patients, contact Lab if suspected virus is not included in test panel.

IV. Summary of respiratory virus test availability beginning late Dec-Jan

	Upper tract sample		
Test	**Outpatient options**	**Inpatient options**	**All lower tract samples**
Respiratory Virus Screen DFA	X	X	
HMPV DFA	X	X	
Respiratory Virus Screen DFA with reflex PCR		X	
Respiratory Virus Lower Tract Panel			X

Note: DFA is done daily with 2 hr turnaround time when lab is open.
Respiratory virus PCR is done Mon-Fri, once a day. Time to result will be much faster than culture (i.e. <24 hr Mon-Thurs; 24-72 hr Fri-Sun).

V. Additional comments:

1. **List of Single Respiratory Virus PCRs:**
    a. Adenovirus
    b. Influenza A and B
    c. RSV A and B
    d. Human metapneumovirus
    e. Rhinovirus
    f. Parainfluenza 1,2,3 (in development)

2. Seasonal virus PCRs that may be added by the lab to the adenovirus and rhinovirus year-round PCR panel:
    a. Jan-Mar: Influenza PCR
    b. Feb-May: HPMV PCR
    c. June-Dec: PIV 1,2,3 PCR (in development)

3. For immunocompromised hosts and ICU patients, individual respiratory virus PCRs that are not included in the panel above can be performed upon request.

4. Criteria should be established in each service for the ordering of reflex PCR and single respiratory virus PCRs
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5. Recommendations for patient management should be determined for different patient populations and clinical scenarios (e.g. antiviral therapy, reducing antibiotic use or duration, implementing infection control practices)

VI. Respiratory Virus DFA Detections at Yale New Haven Hospital: Jan-Dec 2007

Test	No. tested	No. positive
Respiratory virus screen DFA	8368	1573 (18.8%)
Adenovirus		158
Influenza A		378
Influenza B		63
Parainfluenza 1,2,3		296
RSV		678
HMPV DFA*	550	24 (4.4%)

*Most HMPV positives are detected Feb-May in CT

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