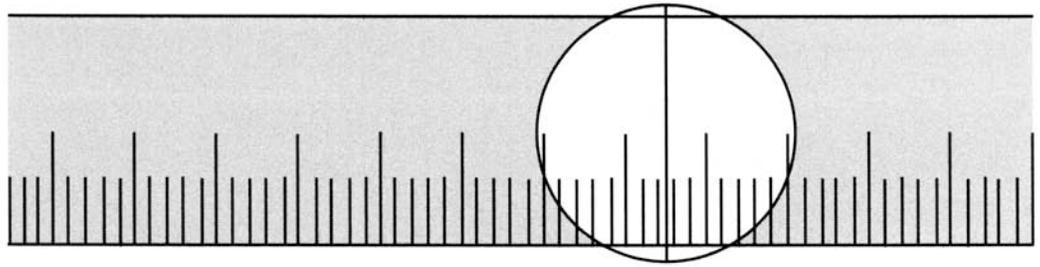


# LAB NEWS



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

| Test  | Upper tract sample |                   | All lower tract samples |
|---|--------------------|-------------------|-------------------------|
|   | Outpatient options | Inpatient options |                         |
| <b>Respiratory Virus Screen DFA</b>                 | X                  | X                 |                         |
| <b>HMPV DFA</b>                                     | X                  | X                 |                         |
| <b>Respiratory Virus Screen DFA with reflex PCR</b> |                    | X                 |                         |
| <b>Respiratory Virus Lower Tract Panel</b>          |                    |                   | 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: HMPV 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

### 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 |
|-------------------------------------|------------|--------------|
| <b>Respiratory virus screen DFA</b> | 8368       | 1573 (18.8%) |
| Adenovirus                          |            | 158          |
| Influenza A                         |            | 378          |
| Influenza B                         |            | 63           |
| Parainfluenza 1,2,3                 |            | 296          |
| RSV                                 |            | 678          |
| <b>HMPV DFA*</b>                    | 550        | 24 (4.4%)    |

\*Most HMPV positives are detected Feb-May in CT

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