TIMELY DIAGNOSIS OF ACUTE *CHLAMYDIA PNEUMONIAE (CPN)* INFECTION USING "REAL-TIME" POLYMERASE CHAIN REACTION (PCR) TESTING

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Acute *Cpn* infection accounts for 10% of community-acquired pneumonia, 5% of acute bronchitis and an unknown proportion of chronic sequelae of acute respiratory illness (ARI).[1] Because clinical manifestations are indistinguishable from viral infections, definitive diagnosis depends on microbiologic methods that are not yet widely available to practicing clinicians.[2] We explored the sensitivity of different specimens for real-time PCR as a diagnostic modality for ARI in a primary care setting. Herein we report the identification of a family outbreak of acute *Cpn* respiratory illness that would have gone undetected and untreated in the absence of timely PCR testing.

The primary care physician obtained 3 specimens for PCR testing on patients with ARI: (1) a dry throat swab, (2) a throat swab immersed in M4 media and (3) 20 mL gargled (distilled) water specimen (GWS). Genomic DNA was isolated using the Qiagen DNA Mini Kit and Taqman real-time PCR was performed targeting a 121 bp region within the 16S rRNA *Cpn* gene using an ABI-Prism 5700 system. For most patients, a single serum specimen was tested (IgM and IgG-sELISA, Medac, GmbH, Hamburg, Germany) according to the manufacturer's instructions.

Four of 17 patients tested positive for *Cpn* by PCR. All samples obtained during an acute illness in 3 patients were PCR+ but quantitative yields were consistently best for dry swab, intermediate for wet swab and least for GWS. All 4 met serologic criteria for recent infection (3 IgM+, 1 IgG+) and were part of a family outbreak. *Index Case:* 48 yo husband was tested 2 weeks after onset of an acute biphasic illness (severe sore throat followed by bronchitis) and received 7 days of doxycycline 100 mg bid before PCR+ test results were available. A post-doxycycline GWS was PCR- despite persisting symptoms that resolved after azithromycin 500 mg/d x 3d, then 750 mg/wk x 2wk. *Wife*: Two weeks after her husband's illness onset, the 50 yo spouse developed a non-specific ARI (nasal congestion, moderate sore throat, mild cough). Because of his positive results, she was also tested, PCR+ results were quickly reported, she was treated with the same azithomycin regimen, and symptoms resolved completely. *Older daughter:* At about the same time as her mother became ill, the 18 yo daughter developed a non-specific ARI (moderate sore throat and hoarseness followed by a productive cough and nasal congestion). She tested PCR+ and symptoms resolved completely after the same azithromycin treatment. *Younger daughter:* One month before illness onset in her father, the 14 yo daughter developed a severe cough and nasal congestion that completely resolved after 4 weeks, without treatment. Dry throat swab and GWS obtained 2 months after illness onset (one month after all symptoms had resolved) were PCR+.

Dry swabs were the most sensitive specimen for PCR diagnosis of *Cpn* ARI. Diagnosing the index case led to testing, identification and timely treatment of *Cpn* infections in 2 family members with non-specific ARI. Persistent PCR positivity was noted one month after spontaneous symptom resolution in another family member. Real-time PCR provided specific microbiologic diagnosis for ARI in "real time." Whether identification of *Cpn* infection will be important in the management of chronic sequelae of ARI requires further research.

References

1. Hahn DL. Ann Allergy Asthma Immunol 1999; 83:271-292

2. Dowell SF et al. Clin Infect Dis 2001; 33:492-503