

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

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Objective: 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.

Methods: 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.

Results: 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 azithromycin 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+.

Conclusions: 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.