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Clinical Diagnosis of Legionnaire's Disease: Six Characteristic Clinical Predictors

To the Editor:

We read with interest the article by Dr Haubitz et al[1] on Dr Fiumefreddo's point score system for Legionnaire's disease in community-acquired pneumonia. Their study has merit and deserves comment.

Because Legionnaire's disease is pneumonia with multisystem involvement, the clinical diagnosis of Legionnaire's disease remains problematic because no single clinical or laboratory finding identifies it. The difficulty with clinical predictors is in selecting parameters most indicative of Legionnaire's disease. We use 6 different characteristic clinical parameters to predict or rule out Legionnaire's disease that are readily available before Legionella serology and urinary antigen test results are reported.

In our experience, we have found that some findings are highly characteristic of Legionnaire's disease, and their absence argues strongly against a Legionnaire's disease diagnosis.[2] In admitted adults with community-acquired pneumonia, we use hypophosphatemia and highly elevated erythrocyte sedimentation rate in our Legionnaire's disease criteria. If not obtained early, hypophosphatemia is easily missed and is transient. An otherwise unexplained elevated erythrocyte sedimentation rate >90 mm/h with community-acquired pneumonia occurs only with Legionnaire's disease and pneumococcal pneumonia.[3] Because creatinine phosphokinase test levels are commonly elevated in Legionnaire's disease, we use this as a Legionnaire's disease predictor. On admission, otherwise unexplained microscopic hematuria is another characteristic finding of Legionnaire's disease.[4] In our experience, an otherwise unexplained highly elevated ferritin level (>2 × normal) is the best single clinical nonspecific laboratory test predictor of Legionnaire's disease.[5] Clinical predictors of Legionnaire's disease should be considered only if otherwise unexplained by another disorder. No other community-acquired pneumonias are associated with highly elevated ferritin levels, microscopic hematuria, or hypophosphatemia. In our experience, community-acquired pneumonia with Legionnaire's disease is likely with >3 of these findings, whereas <3 argues strongly against Legionnaire's disease (Table).

We agree with Haubitz et al[1] that empiric Legionnaire's disease therapy is important if Legionnaire's disease is likely on the basis of clinical predictors. Unnecessary antibiotic coverage (eg, macrolides) promotes *Streptococcus pneumoniae* resistance. Unnecessary double drug therapy increases costs and potential adverse effects. Instead of double covering community-acquired pneumonia until Legionella test results are reported, it seems more prudent to use clinical predictors to treat Legionnaire's disease and atypical pathogens with doxycycline or respiratory quinolone or typical community-acquired pneumonia pathogens with a β-lactam.

Clinical predictors can reduce unnecessary antibiotic use and minimize resistance. We commend the authors for their work and offer practitioners our 6 characteristic clinical

Table Legionnaire's Disease: Six Clinical Predictors and Diagnostic Eliminators in Adults Admitted with Pneumonia*

Diagnostic Predictors	Diagnostic Eliminators
Clinical Predictors • Fever (>102°F)	Clinical Eliminators • Sore throat • Severe myalgias
Laboratory Predictors† • Highly elevated ESR (>90 mm/h) or CRP (>180 mg/L) • Highly elevated ferritin levels (>2 × normal) • Hypophosphatemia (on admission/early) • Highly elevated CPK (>2 × normal) • Microscopic hematuria (on admission)	Laboratory Eliminators • Leukopenia • Thrombocytopenia • Negative chest x-ray (no infiltrates)
Legionnaire's disease very likely if >3 predictors present	Legionnaire's disease very unlikely if <3 predictors or >3 diagnostic eliminators present

CPK = creatinine phosphokinase test; CRP = C-reactive protein; ESR = erythrosedimentation rate.

*Pulmonary symptoms: shortness of breath, cough, and so forth with fever and a new focal/segmental infiltrate on chest x-ray.

†Otherwise unexplained. If finding is due to an existing disorder, it should not be used as a clinical predictor.

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predictors that are also highly effective in presumptively diagnosing or ruling out Legionnaire's disease.

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