Published in final edited form as:

N Engl J Med. 2018 November 15; 379(20): 1971–1972. doi:10.1056/NEJMc1811150.

Procalcitonin-Guided Antibiotic Use – Correspondence

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The null result for procalcitonin (PCT) on antibiotic utilization reported by Huang et al.¹ is incongruent with our experience as an early emergency department (ED) adopter where rapid PCT has been ordered on over 4,000 patients since 2014. Procalcitonin's ability to differentiate viral from bacterial infections is most impactful when diagnostic uncertainty exists vis-à-vis bronchitis versus pneumonia.^{2–4} As both conditions commonly have viral etiologies, PCT, if followed, has the potential to substantially reduce ED antibiotic prescribing.⁵ Unfortunately, these diagnoses comprised less than half of the trial subjects. For bronchitis, PCT guidance was adhered to in most cases yielding a 14.8% reduction in ED antibiotic prescribing.¹ Conversely, in pneumonia cases, the PCT result was almost universally disregarded (77.7% of cases had negative PCT result yet 71.9% received antibiotics).¹ Simply put, clinicians did not trust PCT even among a majority low risk cohort (60% PSI Class I and II) which attenuated the observed 4.4% reduction in ED antibiotic prescribing for pneumonia.¹ Future work should focus on the utility of ED PCT when pneumonia is clinically suspected.

Acknowledgments

Grant: MP is a recipient of grant funding from the Agency for Healthcare Research and Quality (K08HS024342) that supported his effort on this correspondence.

References:

1. Huang DT, Yealy DM, Filbin MR, Brown AM, Chang C- CH, Doi Y, Donnino MW, Fine J, Fine MJ, Fischer MA, Holst JM, Hou PC, Kellum JA, Khan F, Kurz MC, Lotfipour S, LoVecchio F, Peck-Palmer OM, Pike F, Prunty H, Sherwin RL, Southerland L, Terndrup T, Weissfeld LA, Yabes J, Angus DC. Procalcitonin-Guided Use of Antibiotics for Lower Respiratory Tract Infection. *N Engl J Med*. 2018;0(0):null. doi:10.1056/NEJMoa1802670.

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Disclaimers: No potential conflict of interest relevant to this letter was reported.

2. Schuetz P, Wirz Y, Sager R, Christ-Crain M, Stolz D, Tamm M, Bouadma L, Luyt CE, Wolff M, Chastre J, Tubach F, Kristoffersen KB, Burkhardt O, Welte T, Schroeder S, Nobre V, Wei L, Bucher HC, Bhatnagar N, Annane D, Reinhart K, Branche A, Damas P, Nijsten M, de Lange DW, Deliberato RO, Lima SS, Maravi -Stojkovi V, Verduri A, Cao B, Shehabi Y, Beishuizen A, Jensen J- US, Corti C, Van Oers JA, Falsey AR, de Jong E, Oliveira CF, Beghe B, Briel M, Mueller B. Procalcitonin to initiate or discontinue antibiotics in acute respiratory tract infections. *Cochrane Database Syst Rev.* 2017;10:CD007498. doi:10.1002/14651858.CD007498.pub3.
3. Simon L, Gauvin F, Amre DK, Saint-Louis P, Lacroix J. Serum Procalcitonin and C-Reactive Protein Levels as Markers of Bacterial Infection: A Systematic Review and Meta-analysis. *Clin Infect Dis.* 2004;39(2):206–217. doi:10.1086/421997. [PubMed: 15307030]
4. Sikka R, Tommaso LH, Kaucky C, Kulstad EB. Diagnosis of pneumonia in the ED has poor accuracy despite diagnostic uncertainty. *Am J Emerg Med.* 2012;30(6):881–885. doi:10.1016/j.ajem.2011.06.006. [PubMed: 21855251]
5. Jain S, Self WH, Wunderink RG, Fakhran S, Balk R, Bramley AM, Reed C, Grijalva CG, Anderson EJ, Courtney DM, Chappell JD, Qi C, Hart EM, Carroll F, Trabue C, Donnelly HK, Williams DJ, Zhu Y, Arnold SR, Ampofo K, Waterer GW, Levine M, Lindstrom S, Winchell JM, Katz JM, Erdman D, Schneider E, Hicks LA, McCullers JA, Pavia AT, Edwards KM, Finelli L. Community-Acquired Pneumonia Requiring Hospitalization among U.S. Adults. *N Engl J Med.* 2015;373(5):415–427. doi:10.1056/NEJMoa1500245. [PubMed: 26172429]