

## **Can NPT be used to distinguish eosinophilic inflammatory phenotypes in COPD?**

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**Background:** Near-patient testing (NPT) is increasingly being used in the management of chronic conditions.[1] In COPD, NPT devices include the spirometer and saturation probe, but these do not directly guide treatment. The blood eosinophil count at a cut off of  $\geq 2\%$  has been shown to determine which patients should receive corticosteroids for exacerbations. [2] An NPT that accurately correlates with whole blood eosinophil counts would be useful.

**Methods:** We conducted an independent comparison of an NPT device: the HemoCue® WBC DIFF against corresponding automated results on 19 volunteers. We compared NPT to automated counts. Samples were taken simultaneously; the NPT was carried out immediately and whole blood was sent for laboratory analysis. Intraclass correlation coefficients (ICC), sensitivity and specificity were calculated, with stratification for allergy status.

**Results:** The median (range) age was 27 (22-44) years, 7 (37%) were male and 8 (42%) had a history of allergy. Strong correlations were seen between the HemoCue® WBC DIFF and whole blood for white cell count, neutrophils and eosinophils respectively ( $r=0.87$ ;  $r=0.94$ ;  $r=0.71$ ,  $p<0.01$  for all). The NPT correctly identified a blood eosinophil level of  $\geq 2\%$  with a sensitivity (95% CI) of 100% (59–100) and a specificity of 83% (52–98). The mean ICC was 0.89 (0.71–0.96), indicating minimal variability, and was not affected by atopy status.

**Conclusion:** The HemoCue® WBC DIFF NPT could be used to guide treatment of COPD exacerbations.

## References

1. Crook, M.A., *Near patient testing and pathology in the new millennium*. Journal of Clinical Pathology, 2000. **53**(1): p. 27-30.
2. Bafadhel, M., et al., *Blood eosinophils to direct corticosteroid treatment of exacerbations of chronic obstructive pulmonary disease: a randomized placebo-controlled trial*. Am J Respir Crit Care Med, 2012. **186**(1): p. 48-55.