

## Conference abstract

# An Optical Character Recognition (OCR) Based Complete Blood Count (CBC) Reporting Tool Enables Automated Peripheral Blood Smear Report Generation and Improves TAT

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## INTRODUCTION

The peripheral blood smear report involves reading and interpreting complete blood count (CBC) printouts alongside peripheral cells morphology. In our project we utilize OCR technology to automatically extract data from CBC printouts, fully eliminating cumbersome manual transcription from the workflow. Reduce the administrative time required to draft a preliminary report, thereby improving overall laboratory Turn Around Time. Ensure the automated statements accurately reflect the raw data and are correctly sorted by clinical significance for the pathologist.

## METHODS

In this study, we utilize a commercially available OCR (Optical Character Recognition) based AI platform ([www.happypathology.com](http://www.happypathology.com)). The CBC report generating tool in this website can automatically read ~24 lines from CBCs (otherwise called 'hemogram' and 'scatter plots') and converts this into three lined statements, one each for RBC, WBC and platelets. In addition to reporting normal and abnormal statements, the reporting tool also sorts the 3 statements, by order of clinical significance. For example, anemia with normal WBC and platelets will result in the RBC statement in line 1 followed by WBC, platelet statements. To study the accuracy of this platform, we used the OCR tool and studied the accuracy of report generation from 194 patients, 4656 CBC data points, 776 statements. The accuracy of the 3 statements were scored with an arbitrary 1 point per statement. Correct ordering was given an additional point. Partial correctness (0.5) and incorrect statements scored 0. To study TAT time taken to review CBC and

create report from 5 consecutive cases manually was calculated.

## RESULTS

The OCR tool generated reports were overall 85% accurate. The ordering tool and platelets were the most accurate (100%), followed by RBC (91%) and WBC (84%) statements. TAT was substantially improved: Manual entry took on an average 240 seconds/report. OCR reports were created in less than 12 seconds/report on average (time taken for cut and paste, review and edit); Microscopy not accounted in TAT.

## CONCLUSIONS

Plan-Do-Study-Act (PDSA) methodology was utilized: Plan: Identify the manual reporting bottleneck in peripheral smear workflows. Do: Implement the OCR extraction tool. Study: Measure statement accuracy and TAT across 194 patient charts Act: Refine the tool's sorting logic and establish expansion plans. re-Intervention. Prior to implementation, the time taken to manually review CBCs and create reports for 5 consecutive cases averaged 240 seconds per report. across 776 generated statements, the OCR tool achieved an overall accuracy of 85%. The logic was perfectly accurate for clinical sorting and platelet reporting, with slight descriptive variances observed primarily in complex WBC. The OCR intervention successfully reduced administrative report creation time from an average of 240 seconds (manual) down to less than 12 seconds (automated) per report.

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