Significant Reduced the Blood Smear Review Rate by Using a Modified WAM-H Standard Rule Package

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Objective: HCLAB WAM-H is a clinical Hematology-oriented middleware developed by Sysmex. It is designed to manage logical reports production and transfer information between automated hematology analyzer and Laboratory Information System (LIS). We evaluated the efficacy of two flag-warning systems: XE-5000 Interpretive Program Message (IP) and WAM-H Standard Rule Package (Rule). False warning flags usually result in unnecessary attention and sample rechecking. In the first stage, we compared warning flags and their trueness from those two flag-warning systems by using 2767 clinical blood samples analyzed in the Sysmex automated hematology analyzer XE-5000. After comparison, it revealed some discordance. We found that 237 samples showed IP(+)Rule(-) while 216 samples showed IP(-)Rule(+). These inconsistent samples were further rechecked either by automated hematology analyzer or by manual microscopic review through two independent medical technologists. Accordingly, we modified four rules which easily generated false warning flags. Furthermore, in order to lean the processes in a clinical hematology laboratory, we added two customized rules in the Rule. These modifications provide suitable warning flags to lean the automated hematology analyzer workflow without affecting patient’s final diagnosis. In the second stage, we assessed the effectiveness of this modified Rule. After analyzing 5207 clinical blood samples, we found that the blood smear-making rate was significantly reduced from 34.28% to 21.30%, and the blood smear review rate was decreased by 12.98%. Taken together, by using a modified Rule, it may increase the cost-effectiveness both in quality assurance and risk management in a clinical hematology laboratory.

Key words: WAM-H Standard Rule, XE-5000 IP Message, Blood Smear Review Rate