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Analytical technologies and applications

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IMPACT OF THE INTRODUCTION OF ACL TOP 750 LAS FOR HAEMOSTASIS TESTING ON THE WORKFLOW OF A TOTAL AUTOMATION LABORATORY

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BACKGROUND: To try to improve throughput and pre-analytical sample checks in our total automation core-lab (TLA), in December 2015 two new ACL TOP 750 LAS systems replaced the previous instrument version (TOP 700) dedicated to haemostasis testing. The main goal was to relieve the two TLA Architect c16000 platforms of automatic detection of potential sample interferences by measuring haemolytic, icteric and lipemic indexes in tubes for haemostasis directly on ACL. In this study, we assessed if this change could affect the turnaround time (TAT) of released results and the qualitative evaluation of interference detection.
METHODS: We divided the study into 3 phases, each lasting 3 months: 1) interference indexes (II) measured only by Architects; 2) II detected by both types of instruments, but Architect II values employed only; 3) II measured only by ACL 750. On average, our 24-hour/7-day TLA service receives 700 requests/day of first-line haemostasis tests, namely PT, aPTT and D-dimer (DD), for a total of 370 tubes, and 3800 chemistry test requests on 850 tubes.
RESULTS: In the 3 study phases, we carried out 41,322, 31,391 and 38,844 haemostasis tests, respectively. The median TAT values (expressed as the time from the sample check-in to the result made available to the clinical wards) for haemostasis tests were 39.1, 40.9 and 37.8 min in the 3 phases, respectively; corresponding average TATs for Architect biochemistry tests were 43.6, 43.6 and 45.8 min, respectively. As expected from the high interference thresholds, the number of rejected samples for requested haemostasis tests was low. However, in the third phase ACL 750 nullified for interfering icteric index 12 samples for PT and 20 samples for aPTT in comparison with none in the previous phases using Architect II. Interfering samples also increased for DD from 1-3 in phases 1-2 to 7 samples in phase 3. Haemolysis detection reflected the same trend, with 19, 18 and 7 rejected samples for PT, aPTT and DD, respectively, in phase 3 in comparison with 5-6, 4-6 and 3-1 in previous phases.
CONCLUSIONS: In our TLA setting, the direct II estimate on ACL 750 slightly improved TAT for haemostasis tests. A specific investigation should compare the accuracy of II detection by Architect and TOP 750.