PERFORMANCE IMPROVEMENT MEASURES USING STANDARDIZATION HEAMATOLOGY GUIDELINES IN THE HEAMATOLOGY LABORATORY OF THE MAIN ALEXANDRIA UNIVERSITY HOSPITAL

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Introduction

Quality in laboratory work means accurate ,reliable and timely accepted laboratory results. As diagnostic testing includes five phases: pre-pre analytical, pre-analytical, analytical, post –analytical and post-post analytical, so it is almost important to define the important interrelationship connecting the various phases of the cycle. The, Identification of a valid quality indicators (QIs) is an important part allowing users to measure the quality of a chosen aspect of care through comparison against a known standard and according to the approach of the Institute Of Medicine (IOM) to quality in healthcare. Also, guidelines closes the gap between what clinician do and what scientific evidence supports**.**

Aim of the work

The aim of this study is to optimize lab performance of the pre-pre, pre, post and post-post analytical phases of the lab work in the clinical hematology lab of Main Alexandria University hospital. This will be achieved by using ICSH guidelines for standardization of nomenclature and grading of peripheral blood cell morphological features, ICSH Recommendations for laboratory measurement of direct oral anticoagulants, ICSH guidelines for standardization of bone marrow specimens and reports, The American Society of Hematology 2018 guidelines for management of venous thrombo-embolism and optimal management of anticoagulation therapy, WHO guidelines for best practices in phlebotomy, Guidance from the Scientific and Standardization Committee for lupus anticoagulant and National minimum retesting intervals in pathology March 2021.

Subjects

The study was conducted on the hematology lab services and there was collaboration with some units of the surgery and internal medicine departments in Alexandria University hospital: Clinical cardiology unit, Clinical nephrology unit, Clinical endocrinology unit, Clinical Hematology unit, Clinical oncology unit, Vascular surgery unit, Urology surgery unit and GIT surgery unit.

Methods

The study was divided into three phases each phase had taken three months. **Phase 1 and Phase3** Included Cross sectional survey for physicians of these units about laboratory service satisfaction and another questionnaire for nurses for sampling awareness using questionnaire based on a questionnaire published in previous paper. Also analysis of key performance indicators (KPI) for the analytical phases (pre-pre, pre and post analytical), according to International Federation of Clinical Chemistery and Laboratory Medicine (Working Group "Laboratory Errors and Patient Safety").

Phase 2 included educational sessions for physicians about guidelines on anticoagulant monitoring, thrombophilia testing and bone marrow aspirate and biopsy indications and educational sessions for junior clinical pathologists on standardized nomenculature and guidelines on anticoagulant monitoring, thrombophilia testing and bone marrow aspirate and biopsy indications. also included educational sessions for nurses about WHO guidelines on drawing blood: best practices in phlebotomy 2010.

Results

Table 1: Comparison between Phase 1 and phase 3 according to studied KPIs.

KPI	Phase 1		Phase 3		χ^2	P
	No.	%	No.	%		
Pre-pre analytical phase indicators						
Inappropriate bone marrow test requests	3/181	1.7	0/281	0.0	4.688	^{FE}p=0.060
Inappropriate PT/aPTT test requests	762/2210	34.5	145/1870	7.8	418.478*	<0.001*
Inappropriate time in lupus anticoagulant sample collection	N/A	N/A	6/88	6.8	–	–
Preanalytical phase indicators						
Incorrect sample type	0/8410	0.0	0/7965	0.0	–	–
Incorrect fill level	162/8410	1.93	116/7965	1.46	5.412*	0.020*
Hemolyzed samples	1/8410	0.01	29/7965	0.36	27.749*	<0.001*
Clotted coagulation samples	190/8410	2.26	114/7965	1.43	15.391*	<0.001*
Clotted CBC samples	81/8410	0.96	86/7965	1.08	0.551	0.458
Postanalytical phase indicators						
Inappropriate CBC comment	491/847	58.0	172/552	31.2	96.347*	<0.001*
Missed CBC comments	108/847	12.8	65/552	11.8	0.293	0.588
Inappropriate lupus anticoagulant comments	3/40	7.5	3/88	3.4	1.030	^{FE}p=0.376

Table 2: Comparison between Phase 1 and Phase 3 according to the preanalytical errors frequency

Pre analytical errors	Phase 1(n=434)		Phase 3(n=345)		χ^2	P
	Number of errors	Frequency of errors	Number of errors	Frequency of errors		
Incorrect sample type	0/434	0.0	0/345	0.0	-	-
Incorrect fill level	162/434	37.3	116/345	33.6	1.149	**0.284**
Hemolyzed samples	1/434	0.23	29/345	8.4	34.694*	**<0.001***
Clotted coagulation samples	190/434	43.8	114/345	33	9.309*	**0.002***
Clotted CBC samples	81/434	18.66	86/345	24.93	4.478*	**0.034***

Conclusion

The Present Study results confirmed that tailored monitoring of the total testing process of laboratory cycle should be performed for every unit rather than the whole lab .This would help in tailoring quality improvement interventions according to each unit work processes .

Using KPIs to assess every laboratory phase is mandatory for rigorous assessment of laboratory cycle. Also, educational session based on guidelines has proved to be a successful intervention strategy for improving quality in laboratory work.