JOURNAL-BASED LEARNING EXERCISES

Please select your choice of correct answers and complete the exercises online at: **www.ibms.org/cpd/jbl**

DEADLINE WEDNESDAY 4 DECEMBER 2019

Pre- and postanalytical errors in haematology. De la Salle B. *Int J Lab Hematol* 2019; **41** (Suppl 1) :170–6 (https://onlinelibrary.wiley.com/doi/epdf/10.1111/ijlh.13007).
Assessment No: 090419

01	Lipaemia may affect platelet and WBC counts, Hb measurement, and sickle solubility tests.
02	Diagnostic testing falls into four broad areas that make up the total testing process.
03	An increase in neutrophil count, red cell fragmentation, and platelet activation has been reported post-marathon running.
04	Large and giant platelets can interfere with counts of other blood cells.
05	Lack of financial and staff resources has been suggested as a potential source of extraanalytical error.
06	Poor organisation of services has been suggested as a potential source of extraanalytical error.
07	The ICSH has published a number of standardised quality indicators for all parts of the TTP.
08	Erroneous Hb results from samples taken from a "drip" arm have been implemented in the deaths of patients following unnecessary blood transfusion.
09	Artificially induced, moderate-to-high haemolysis does not affect platelet count.
10	The overall error rate in laboratory medicine is relatively low compared to other areas of medicine.
11	Cytoplasmic fragments in acute leukaemia are a potential cause of a falsely elevated platelet count.
12	The tri-potassium salt of EDTA may be a better alternative than magnesium sulphate as CBC anticoagulant for some platelet parameters.
13	Plebani describes processes such as sample numbering and centrifugation as part of the pre-preanalytical phase.
14	The brand of K_2EDTA tube for CBC is not a clinically relevant source of variation in MCV.
15	Using WHO cut-offs for Hb concentration, 41.7% of women worldwide are classified as anaemic.
16	Lundberg's sole author publication describing the TTP in terms of a "brain to brain" loop included reporting the result to the patient as one of the nine steps.
17	The EFLM recommendation for patient posture is that patients should rest in a supine position for fifteen minutes prior to phlebotomy.
18	Reference interval establishment by conventional means has been suggested as a better approach to harmonisation of core test ranges than indirect methods.
19	A reduction in an already reduced platelet count in cytopenic patients has been reported in specimens delivered by pneumatic tube systems.
20	As defined by Plebani, the estimated proportion of errors arising in the post-postanalytical phase is 13%–20%.

Identification and characterisation of anti-*Pseudomonas aeruginosa* proteins in mucus of the brown garden snail. Pitt SJ, Hawthorne JA, Garcia-Maya M, Alexandrovich A, Symonds RC, Gunn A. *Br J Biomed Sci* 2019; **76** (3): 129–36.
Assessment No: 090119

01	The results obtained in this work indicate promise for the proteins identified to be used to target deep wound infections.
02	Zones of inhibition with mean sizes between 9 mm and 13 mm were observed for all clinical isolates tested.
03	Pseudomonal infections are found in vertebrates and invertebrates.
04	Although the snail mucus showed promising results, the cost of sourcing large numbers of snails is thought to be high and therefore prohibitive.
05	Snail mucus contains lectins with agglutination properties.
06	Weak antimicrobial action was associated with fraction 6.
07	Mucus extracts are effective against skin lesions, but do not promote healing in burn wounds.
08	The authors hypothesised that the snail mucus contained one or more enzymes demonstrating antimicrobial properties.
09	*C. aspersum* has shown antimicrobial activity due to proteins >100 kDa in size.
10	During the research, the snail mucus was tested on two NCTC strains of *P. aeruginosa* alongside six clinical isolates originating from patients with cystic fibrosis.
11	Four novel proteins were identified within the study.
12	CAP-37 appears to target Gram-negative bacteria, showing a weak effect on *P. aeruginosa*.
13	Snail-based remedies have been advocated for several conditions, including urinary tract infections.
14	Analysis by SDS-PAGE of the fractions of mucus obtained via size exclusion chromatography experiments revealed proteins that corresponded in size to those previously identified by the authors.
15	*C. aspersum* mucus extracts are thought to promote wound healing by stimulating migration of fibroblasts.
16	The results obtained from the plate assay yielded quantitative data.
17	Previous experiments have found that proteins less than 30 kDa in size appear to express antimicrobial activity.
18	*Pseudomonas* species thrive in human mucus.
19	Exploring the use of antimicrobial properties of natural remedies has led to the development of artemisinin for treatment of skin infections.
20	Two proteins were selected from the first size exclusion chromatography experiment for mass spectrometry analysis.

REFLECTIVE LEARNING

01	What can be done in your own laboratory to reduce pre-and postanalytical errors?
02	How can the laboratory influence errors that occur before it receives samples?
	The study carried out was in response to the issues relating to the need for new antimicrobial agents to tackle the growing problems associated with resistance.
	Reflect on the resistance levels seen in your laboratory and whether or not the use of alternative approaches to replace or supplement present treatments as identified in this study are viable.