

# JOURNAL-BASED LEARNING EXERCISES



Please select your choice of correct answers and complete the exercises online at: [www.ibms.org/cpd/jbl](http://www.ibms.org/cpd/jbl)

## DEADLINE WEDNESDAY 6 MAY 2020

**Next-generation protein analysis in the pathology department.** Ahmed M, Broeckx G, Baggerman G *et al.* *J Clin Pathol* 2020; 73 (1): 1–6. <https://jcp.bmj.com/content/73/1/1> Assessment No: 020720

01	Traditionally, immunohistochemistry (IHC) is used by pathologists to localise specific proteins or peptides in tissue sections.	11	In mass spectrometry, a laser beam irradiates the matrix.
02	Measurement of protein alterations fails to predict functional consequences (and thus diagnosis and prognosis) any better than DNA alterations.	12	MALDI is typically coupled to a time of flight (TOF) mass analyser.
03	MALDI IMS stands for matrix-assisted laser desorption/ionisation imaging mass spectrometry.	13	The mass range in a normal MALDI-TOF instrument is limited and usually amounts to 30 kDa.
04	The essence of IHC is to make specific proteins or peptides visible under the microscope by means of antigen-antibody recognition by a specific immunoglobulin or primary antibody.	14	In MALDI IMS the mass spectra are recorded with their two-dimensional coordinates on the tissue slide.
05	Monoclonal antibodies have better sensitivity, while polyclonal antibodies tend to be more specific but less sensitive and give more background staining.	15	MALDI is not a soft ionisation process because the matrix is the actual energy absorber.
06	IHC neither helps to subtype tumours, nor visualise specific structures within tissues.	16	There have been publications highlighting the use of MALDI IMS in lung cancer, breast cancer, gastrointestinal tract cancer among others.
07	Evaluated predictive factors in IHC include evaluation of ALK translocation in lung, and V600E mutation status in malignant melanoma.	17	The MALDI IMS method is not suitable for the detection of human papillomavirus.
08	Mass spectrometry encompasses a whole set of techniques to analyse different molecules, limited to proteins and peptides based on the molecular mass.	18	When comparing the techniques used for IHC and MALDI imaging, tissues are generally thicker for MALDI imaging.
09	An additional preparation step required for high-molecular weight proteins is trypsin.	19	A huge advantage of MALDI imaging over IHC is that more than 100 peptides can be evaluated at once.
10	High molecular weight proteins are easily detected in MALDI analysis.	20	In the TagMass method, a specifically designed antibody against a target antigen is linked to a laser-cleavable peptide with a known sequence.

## REFLECTIVE LEARNING

01	Critically review the quantitative use of immunohistochemistry in your laboratory.	02	Critically review the prognostic and predictive testing which occurs on patient samples within your laboratory.
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## DEADLINE WEDNESDAY 6 MAY 2020

**Transfusion requirement and length of stay of anaemic surgical patients associated with a patient blood management service: a single-centre retrospective study.** Faulds J, Whately-Smith C, Clarke K. *Transfus Med* 2019; **29** (5): 311–8. Assessment No: 020220

01	A pre-operative haemoglobin of <120 g/L has been associated with a 10-fold increase in the requirement for allogeneic blood transfusion following total hip and knee joint arthroplasty.	11	The surgery database included 26,641 separate records and the PBM database comprised 1910 records.
02	Since 2003, patient blood management (PBM) includes all surgical specialties, supporting both primary and secondary care.	12	For patients with multiple surgeries in the year, data were collected from all surgeries.
03	Oral iron is well tolerated and the effects are instant.	13	Overall, 3% of patients were transfused and, of these, 83.3% of transfusions occurred in patients who had been identified as anaemic.
04	In 2015, Kotze <i>et al.</i> found that a full treatment dose of intravenous (IV) iron can be given rapidly, generally without side-effects, with a rapid increase in blood values after 2–4 weeks.	14	Overall, the length of stay for PBM and non-PBM patients was 3.7 and 2.1 days, respectively.
05	As part of the PBM programme, pre-operative anaemia assessment and correction began in orthopaedics in 2006 and was expanded to all surgeries in 2009.	15	Within Table 1, both PBM and non-PBM anaemic groups show that there were more females than males.
06	Once patients are accepted and added to an elective surgery list, GPs are asked to perform baseline blood tests that include full blood count (FBC), C-reactive protein (CRP) and reticulocyte count.	16	Table 2 shows that the highest percentage of patients who were transfused were anaemic and were assessed by PBM.
07	Patients identified as iron-deficient with or without anaemia (Hb <120 g/L and either ferritin <30 ng/mL and CRP <20 g/L or ferritin <70 ng/mL and CRP >20 g/L) are considered for haemoglobin optimisation.	17	Of patients who had been assessed for pre-surgery anaemia correction, 26.7% were initially recommended no iron therapy.
08	Patients undergoing surgery in the calendar month of January 2017 were excluded as they may not have been assessed for anaemia correction in 2017.	18	The surgical specialties demonstrate that the largest proportion of anaemic patients not assessed for anaemia correction were those undergoing orthopaedic surgery.
09	The main study outcomes were the requirements for perioperative blood transfusion.	19	Length of stay was longer in patients where pre-surgery anaemia had not been assessed.
10	The risk of blood transfusion associated with each procedure was retrospectively designated as high risk, low risk or uncertain, based on the subjective assessment of the procedure.	20	Patient blood management activities in Europe and the UK are integrated into routine care pathways for surgical patients.

## REFLECTIVE LEARNING

01	Compare and contrast the adverse reactions that can occur with both blood transfusions and IV iron infusions.	02	Discuss the benefits of including PBM strategies into pre-assessment pathways and how the blood transfusion laboratory can play a role in this.
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is easy to use and meets the requirements for achieving and maintaining professional registration. The scheme is now electronic, so recording, amending and validating are all carried out online.

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advances and techniques as part of CPD.

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