

# JOURNAL-BASED LEARNING EXERCISES



Each article's contents should be read, researched and understood, and you should then come to a decision on each question. The pass mark is 17 out of 20 questions answered correctly. JBL exercises may be completed at any time until the published deadline date. 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 7 FEBRUARY 2018

<b>Diagnostic virology and patient care: from vaguely interesting to vitally important.</b> Pitt SJ, Phillips DI. <i>Br J Biomed Sci</i> 2017; 74 (1): 16–23. Assessment No: 110617		<b>Guideline for the acquisition and preparation of conventional and endobronchial ultrasound-guided transbronchial needle aspiration specimens for the diagnosis and molecular testing of patients with known or suspected lung cancer.</b> van der Heijden EH, Casal RF, Trisolini R <i>et al.</i> ; World Association for Bronchology and Interventional Pulmonology Task Force on Specimen Guidelines. <i>Respiration</i> 2014; 88: 500–17. Assessment No: 110817	
01	The earliest noted connection made between a human disease and a “virus” that evaded filtration was for tobacco mosaic virus.	01	The number of needle aspirations with both conventional TBNA and EBUS-TBNA was found to impact the diagnostic yield, with at least two passes needed for optimal performance.
02	Damage caused by viral replication processes and the host’s immune response to the infection does not lead to long-term sequelae.	02	The use of rapid on-site cytology examination increases the diagnostic yield.
03	The approximate annual incidence of human immunodeficiency virus (HIV) infection in the UK is 100,000.	03	The recommendations for a cervical mediastinoscopy state that surgeons need to sample both contralateral and ipsilateral nodes plus the subcarinal region in every case.
04	Respiratory syncytial virus (RSV) is an important cause of severe infection in young children and the elderly.	04	The number of aspirates per LN affects the diagnostic yield quantity and quality of the obtained specimen.
05	During the first half of 2012, an outbreak of measles centred on Merseyside occurred, during which 1339 people were identified as possibly having the infection.	05	The needle size affects the diagnostic yield, quantity and quality of the specimen.
06	Worldwide, at least 600 million people are thought to be chronic carriers of hepatitis B virus and over 240,000 deaths are attributable to the consequences of infection.	06	The literature suggests that better success rates are obtained with the use of 19-gauge needles, as compared with 22-gauge needles.
07	Use of immunofluorescence-labelled antibodies to detect viruses in respiratory secretions is a relatively rapid method, but the sample must be collected appropriately.	07	The use of miniforceps does not seem to influence the diagnostic yield in lung cancer but may be useful in patients with suspected lymphoma or sarcoidosis.
08	It is not usually possible to identify viral species by electron microscopy appearance alone.	08	There is enough evidence that two aspirations with EBUS-TBNA and four to five aspirations with conventional TBNA provide near the maximum yield.
09	Herpes simplex virus takes about 21 days to produces its very distinctive cytopathic effect (CPE).	09	There is not enough evidence to recommend for or against the use of suction with EBUS biopsies for diagnostic purposes.
10	It is not possible to detect IgG and IgM separately using either radioimmunoassay (RIA) or enzyme immunoassay (EIA).	10	Cell blocks perform better in terms of diagnosis of lung cancer than tissue core techniques.
11	The EIA principle has been applied to immunochromatographic point-of-care testing (POCT) kits such as those for the rapid testing of stool samples for norovirus.	11	There does not appear to be a superior method for specimen preparation.
12	In general, POCT kits are inexpensive compared to laboratory-based assays, and the antigen detection formats offer ideal sensitivities.	12	Rapid on-site cytology examination (ROSE) can decrease the number of aspirations.
13	In clinical samples both viral and human genomic material is sequenced and this inevitably generates a lot of data.	13	ROSE can reduce the number of additional procedures.
14	Next-generation sequencing (NGS) is being applied to sequencing HIV and hepatitis C virus (HCV) isolates to understand evolution of the virus within and between patients.	14	EBUS sampling must be initiated at N1 regions, followed by N2 and N3 regions.
15	Qualitative methods such as TaqMan and real-time polymerase chain reaction cannot be used to measure viral load.	15	The concordance rate of ROSE with the final diagnosis is low.
16	Parvovirus B19 was discovered by Dane and colleagues using EM to examine serum.	16	In general, the material obtained by EBUS-TBNA is suitable for molecular analysis.
17	Enteric cytopathic human orphan (ECHO) viruses are only rarely a cause of acute, mild, self-limiting febrile illnesses.	17	Cell blocks and core tissue represent the best material for mutational analysis and are indispensable at the moment to assess ALK translocation.
18	It is not possible to distinguish between wild-type and vaccine-derived polio virus.	18	A prospective study by Lee <i>et al.</i> of EBUS-TBNA for mediastinal staging of patients with non-small cell lung cancer (NSCLC) showed that 95% adequacy and 100% sensitivity were achieved with three aspirations per LN and did not increase with a fourth.
19	Polio is still endemic only in two countries, Afghanistan and Pakistan.	19	When RNA isolated from TBNA samples is used, the quality of RNA is critical and special attention should be paid to the storage of the sample to avoid RNA degeneration.
20	Smallpox virus and rinderpest virus are two pathogenic infectious agents that have been deliberately eradicated from the world.	20	Conventional TBNA and EBUS-guided TBNA are used in patients with suspected lung cancer, peripheral tumours, sarcoidosis and other diseases accompanied by mediastinal or hilar lymphadenopathy.

### REFLECTIVE LEARNING

01	Discuss the most effective use of point-of-care tests as part of a diagnostic virology service.	01	Discuss how ROSE at EBUS could be introduced into your laboratory. What barriers would you have to overcome?
02	Discuss the applications of next-generation sequencing in diagnostic virology.	02	Critically evaluate the use of molecular pathology to non-gynaecological cytology within your laboratory.