Original Article

An Online Survey on Practice and Opinion on Preoperative Viral Serology Testing among Anesthesiologists, Surgeons, and Public Health Professionals

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Abstract

Background and Objectives: Currently, there is no recommendation or guideline on routine preoperative viral serology testing. This online questionnaire-based survey was conducted to explore the current practice and opinion across the country (India). **Methodology:** After obtaining permission from the investigators' affiliated institute, a set of 12 questions with multiple choices was sent to the anesthesiologists, surgeons, and public health professionals using the Google Form. The participants anonymously completed this online-based questionnaire. The responses were downloaded in the Excel format and further expressed in absolute number and percentage scale. Interprofessional comparisons were made using Fisher's exact test (INSTAT software from GraphPad Prism Software Inc., La Jolla, CA, USA), and $P < 0.05$ was considered statistically significant. **Results:** A total of 1157 e-mails were sent, of which 216 bounced; 22.8% of the remaining responded, the majority (76.3%) were anesthesiologists. One-hundred and eighty-seven (89.9%) responders opined for routine preoperative viral testing: 182 (87.5%) were practicing, while 142 out of the 206 (68.9%) of the responders' hospitals had a protocol in place. Compared to the opinions of public health administrators/community physicians, no statistically significant difference (all $P > 0.05$) was found between the anesthesiologists and the surgeons. Even the anesthesiologists, as well as the surgeons, had similar opinions and practices (all $P > 0.05$) except the anesthesiologists who were having statistically significantly higher knowledge about the inability to detect case by serology testing during the window period ($P = 0.02$). **Conclusion:** Preoperative viral (hepatitis B virus surface antigen, anti-hepatitis C virus, and human immunodeficiency virus I and II) testing is very rampant as routine, and nine out of ten practitioners opine for the mandatory routine practice in India.

Keywords: Anesthesia, diagnosis, hepatitis, human immunodeficiency virus, mass screening, public health administration, surgery, viral

Introduction

Blood and other body fluid-borne infections such as human immunodeficiency virus I and II (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) pose risks to other patients and health-care providers. Although there are some authoritative, evidence-based guidelines for the preoperative laboratory tests, there is no guideline or recommendation on the mandatory screening of viral serology in patients who undergo various surgeries or procedures.[1,2] The Centers for Disease Control and Prevention (United States) recommends each and every case to be considered as a potential positive case.[3] Anesthesiologists, surgeons, and other health-care providers involved frequently come in contact with such fluids, and are exposed to the risk of potential infection. Therefore, delivering health care for such patients remains a concern despite the known fact that the use of personal prevention equipment and precautions prevents exposure to diseases. In India, this issue is covered categorically neither by any administrative/public health guideline nor by health insurance policies. These facts lead to a dilemma in the context of preoperative routine viral screening. The present survey was conducted with an objective of getting an idea about

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seropositive case burden and to explore the current practice and opinion on the routine preoperative screening across the country (India). This may help us in preparing a future protocol/guideline to deliver better and cost-effective health care as preoperative tests have a substantial potential impact on health care at all levels of public health.

Methodology

The present survey was conducted after getting approval from the affiliated institute of the investigators with an exemption for consent. Clinical trial registration was not required as per the rule of the Clinical Trials Registry-India. This cross-sectional survey was conducted from February 2018 to April 2018 and was created and conducted using the free online survey software and questionnaire tool service from Google Forms (https://docs.google. com/forms). An e-mail with a link to the online survey was sent to the anesthesiologists, surgeons, and public health professionals, including few administrators affiliated with the different organizations across the country (India). Reminder e-mails were also sent to potential respondents if no reply was received after 2 weeks of the original e-mail request. Responses were collected anonymously via the survey.

The sample size for the present study was calculated for a hypothesized frequency of outcome "routine preoperative viral testing" of 90% with an absolute precision of 5% for a large population with a design effect of 1.8, which gave a sample size of 249 for 95% confidence level (the sample size was calculated using online free epidemiological tool "OpenEpi" [www.openepi.com]).

The online survey consisted of 12 questions [Annexure] covering specific aspects of preoperative viral screening practice. The survey questions were designed to obtain necessary demographic information about the practitioner's hospital, including hospital type (i.e., autonomous institute, medical college, private teaching hospital, private nonteaching hospital, and public sector nonteaching hospital), the location of the hospital, and experience of the practitioner or responder. Information was also collected regarding the routine serology screening, any existing protocol, and the average number of seropositive cases they are doing. Additional questions were structured to determine the perception regarding serology screening, positive or negative screening, and covering of operating tables in seropositive cases. The questionnaire was validated internally from three experts and externally by two experts only and was supplied in English-only version.

The responses were directly downloaded from the Google Form as an Excel file master chart and necessary tables. Grossly incomplete responses, defined as not having responses in more than four questions, were excluded from the analysis. The data were then expressed in absolute number and percentage scale. The interprofessional practice and opinion were further compared using Fisher's exact test, and INSTAT software (GraphPad Prism Software Inc., La Jolla, CA, USA) was used for the purpose. $P \leq 0.05$ was considered statistically significant.

Results

The link of the survey questionnaire was sent to 1157 e-mail ids. Two hundred and sixteen e-mails could not be delivered due to some technical reasons. Among the remaining, a total of 215 (22.8%) persons responded. Seven responses were grossly incomplete, and finally 208 responses were analyzed. There were 164 (76.3%) anesthesiologists, 26 (12.1%) surgeons, and the remaining 8.7% were community/public health specialists. One hundred and thirty-eight (64.2%) respondents were associated with either autonomous institutes or medical colleges and hospitals. Eighty-nine (41.4%) responders were working in metropolitan cities [Table 1].

The majority (95.2%; 197 out of 207) of the participants know that negative screening test result does not rule out infection, yet 187 (89.9%) responders think that preoperative viral testing should be routine and 182 (87.5%) respondents were doing the tests preoperatively. Nearly 69% (142 out of 206) of the responders admitted that their hospitals have either departmental or institutional protocol in place, and 87.5% of the respondents agreed that all serology tests (i.e., hepatitis B virus surface antigen [HBsAg], anti-HCV, and HIV-I and II) should be done [Table 2]. The reported prevalence of seropositive cases was low; 72.6% of the respondents come across one to two, or less seropositive elective surgical cases in their hospitals. The majority (63.2%; 122 out of 193) of the respondents practiced covering of the operating table and adjacent floor while doing seropositive cases.

Five (27.8%) public health professionals responded that their hospital do not practice routine preoperative viral screening; however, all (17 responses out of 18) public health

Table 1: Specialty and working area-wise distribution of the responders and their responses

Question with responses	*n* (%)
I am workings as a/an	
Anesthesiologist	164 (78.8)
Surgeon	26 (12.5)
Community/public health professional	18 (8.7)
I am working in a/an	
Autonomous institute	28 (13.5)
Government medical college and hospital	83 (39.9)
Private medical college and hospital	28 (13.5)
Public sector nonteaching hospital	19 (9.1)
Private sector nonteaching hospital	50 (24.0)
Hospital is located at	
Semi-urban	25 (12.0)
District headquarter	25 (12.0)
Tier-II city	69 (33.2)
Metropolitan city	89 (42.8)
I have an experience of (years)	
<5	100 (48.1)
5-10	48 (23.1)
>10	60 (28.8)

Table 2: Practice and opinions on preoperative viral testing

Question with responses	*n* (%)
Practicing viral serology testing routinely (*n*=208)	
Yes	182 (87.5)
No	10 (4.8)
I don't want but need to do as per hospital protocol	16 (7.7)
Does your hospital have a protocol? (*n*=206)	
Yes	142 (68.9)
No	25 (12.1)
Not sure	39 (18.9)
Do you think preoperative viral testing should be routine? (*n*=206)	
Yes	186 (90.3)
No	14 (6.8)
Not sure	6 (2.9)
If yes or doing, what are the tests should be done? (*n*=200)	
HBV	15 (7.5)
HCV	2 (1.0)
HIV-I and II	5 (2.5)
All of the above	175 (87.5)
Not applicable	3 (1.5)
In which cases, the tests should be done? (*n*=207)	
All surgery/invasive procedures	174 (84.1)
Suspected cases as per history	24 (11.6)
Only in elective cases	9 (4.3)
How many seropositive cases you get in elective operation list? (*n**=179)	
<1/100	51 (28.5)
1-2 cases/100	79 (44.1)
3-5 cases/100	42 (23.5)
>10 cases/100	7 (3.9)
No idea**	28**
Do you know that a negative screening test doesn't rule out infection? (*n*=207)	
Yes	197 (95.2)
No	10 (4.8)
Are you covering operating theater table with plastic covers? (*n**=193)	
Yes	122 (63.2)
No	71 (36.8)
I am not working in the operating room**	13**

**Excluded from percentage calculation. **N*: Adjusted total number, *N*: Total number, HIV: Human immunodeficiency virus, HCV: Hepatitis C virus, HCV: Hepatitis C virus

professionals think that the testing should be routinely done and include all, i.e., HBsAg, anti-HCV, and HIV-I and II.

There was no statistically significant difference (all $P > 0.05$) between the opinions of public health administrators/community physicians and anesthesiologists as well as public health administrators/community physicians and surgeons in the context of whether the tests should be routine, which tests should be done, and when to be done [Table 3]. Even the opinions of anesthesiologists and surgeons were indifferent [Table 4], but the anesthesiologists had statistically significantly more knowledge about the fact that a negative screening test result does not exclude a case (96.9% vs. 84.6%; $P = 0.02$) [Table 4].

Discussion

Health-care cost has remained a concern all over the world, making cost-effective yet quality health-care delivery a vital objective for the authority. A huge number of patients undergo a surgical/interventional procedure and are nearly always subjected to routine preoperative tests, despite having negative recommendations in guidelines.[1,2,4] However, these routine tests have a very less impact on perioperative anesthetic management, even in older patients.[5,6] The prevalence of HBV and HCV and HIV is very low in most of the areas of the world. The prevalence of HIV in India is 0.26% (one case/400).[7] The findings of the present study also indicate that the prevalence of such diseases is low, mostly <1–2 cases per hundred. Moreover, many of such patients are already diagnosed. In such a scenario, doing these tests in all patients costs billion. Therefore, the question arises, "is this cost-effective?" and should we do preoperative viral tests routinely? Unfortunately, authoritative guidelines do not address this issue. Therefore, the practice has remained dependent on the practitioners' personal decision or hospital protocol. The present findings indicate that the routine testing is very much prevalent despite the fact that many of the practitioners know that a negative test result does not exclude a positive case in the "window period." This practice may be influenced by many factors; hospital or departmental protocol is one of such.[8] In the present study, although protocols were present in nearly 70% of the hospitals, only 7.7% of the responders indicated that they were doing the tests because of the protocol. Although patient-specific preoperative investigations are the presently advocated, cost-effective, as well as impactful strategy,[1,9-11] only 11.6% believed that the preoperative viral tests should not be routine rather based on history and examination. These findings indicate that the practitioners are the more accountable and the reason behind the decision of doing routine preoperative viral testing. This finding resembles the results of an interview where the authors indicated that "it (presurgical viral testing) is 100% for me (practitioner)."[12]

The present findings indicate that routine preoperative screening is very much prevalent (87.5%). Practitioners and public health people argue that all patients should be tested to prevent infecting the medical staff as well as the instrument and the future patients too. Although this statement appears to be justifiable, it is negated by a few facts: (a) in the perioperative period, all patients should be considered as infectious, and all bodily fluid should be considered as hazardous;[13] (b) universal/standard precautions should be followed in all cases; (c) patients may test negative during the window period, maybe occult carrier, and is more infectious; (d) false-positive results are also a possibility;[14,15] and (e) the reusable instruments used in the surgery are always sterilized before using in the next surgery.

Table 3: Comparison of opinions of anesthesiologists and surgeons with the public health physicians/administrators tested with Fisher's exact test

Questions and responses	Public health, *n/N* (%)	Anesthesiologist, *n/N* (%)	Two-tailed *P*	Surgeon, *n/N* (%)	Two-tailed *P*
Do you think it should be done routinely?					
Yes	17/17 (100.0)	145/164 (88.4)	0.223	24/25 (96.0)	1.00
No	0/17 (0.0)	9/164 (5.5)	1.0	1/25 (4.0)	1.00
I don't want but have to do due to protocol	0/17 (0.0)	10/164 (6.1)	0.601	0/25 (0.0)	-
What are the tests to be done?					
HBsAg	0/17 (0.0)	14/164 (8.5)	0.368	1/26 (3.83)	1.00
Anti-HCV antibody	0/17 (0.0)	1/164 (0.6)	1.00	1/26 (3.83)	1.00
HIV-I and II	0/17 (0.0)	5/164 (3.0)	1.00	0/26 (0.0)	--
All of the above	17/17 (100.0)	135/164 (82.4)	0.078	23/26 (88.5)	0.265
Not applicable/not doing	0/17 (0.0)	9/164 (5.5)	1.00	1/26 (3.83)	1.00
In which cases, tests are to be done?					
All surgical/interventions	12/17 (70.6)	139/164 (84.8)	0.165	23/26 (88.5)	0.230
Selective case	3/17 (17.6)	18/164 (10.9)	0.423	3/26 (11.5)	0.666
All elective cases	2/17 (11.8)	7/164 (4.3)	0.201	0/26 (0.0)	0.150
Do you know that a negative screening test result do not exclude a case?					
Yes	16/17 (94.1)	159/164 (96.95)	0.451	22/26 (84.6)	0.632
No	1/17 (5.9)	5/164 (3.05)		4/26 (15.4)	

n: Number, *N*: Total number, HBsAg: Hepatitis B surface antigen, HCV: Hepatitis C virus, HIV: Human immunodeficiency virus

Table 4: Comparison of opinions of anesthesiologists with surgeons tested with Fisher's exact test

Questions and responses	Anesthesiologist, *n/N* (%)	Surgeon, *n/N* (%)	Two-tailed *P*
Do you think it should be done routinely?			
Yes	145/164 (88.4)	24/25 (96.0)	0.481
No	9/164 (5.5)	1/25 (4.0)	1.00
I don't want but have to do due to protocol	10/164 (6.1)	0/25 (0.0)	0.363
What are the tests to be done?			
HBsAg	14/164 (8.5)	1/26 (3.83)	0.697
Anti-HCV antibody	1/164 (0.6)	1/26 (3.83)	0.255
HIV-I and II	5/164 (3.0)	0/26 (0.0)	1.00
All of the above	135/164 (82.4)	23/26 (88.5)	0.578
Not applicable/not doing	9/164 (5.5)	1/26 (3.83)	1.00
In which cases, tests are to be done?			
All surgical/interventions	139/164 (84.8)	23/26 (88.5)	0.772
Selective case	18/164 (10.9)	3/26 (11.5)	1.00
All elective cases	7/164 (4.3)	0/26 (0.0)	0.596
Do you know that a negative screening test result do not exclude a case?			
Yes	159/164 (96.95)	22/26 (84.6)	0.021
No	5/164 (3.05)	4/26 (15.4)	0.021

n: Number, *N*: Total number, HBsAg: Hepatitis B surface antigen, HCV: Hepatitis C virus, HIV: Human immunodeficiency virus

It is indicated that the knowledge of HIV status may allow the perioperative team to take appropriate measures to decrease infection risk, and this reason favors doing routine preoperative viral screenings. Some even argue that the patient may be benefited. However, the risk during individual procedures is low, and even if exposed to an instrument infected with HIV, the risk of contracting HIV from percutaneous exposure is 0.3%.[16,17] Moreover, just knowing the patients' viral infection status is unlikely to reduce the risk if preventive measures are not taken, and preventive measures are to be used irrespective of the knowledge or status. In fact, information can negatively affect patient care and may even face social rejection.[13,18] Similarly, a positive test case does not mean that needle prick injury will not happen. While the practice of "looking" for the suturing needle with a finger is not encouraged or very irresponsible,[13] inadvertent prick mostly happens in hand/fingers and those are always covered by gloves, be it a positive or negative case. The fact that a patient with early HIV infection has a nearly equal operative risk as compared to a HIV-negative patient,[13] also questions the relevance of routine preoperative viral testing. It has also been noted that the accepted ethical standards of autonomy,

confidentiality, and informed consent are not always adhered to.[18]

As per the standard precaution that needs to be followed in health-care practice, using personal protective equipment (PPE) is mandatory during surgery/intervention. Moreover, knowing a positive case does not always lead to use complete disposable materials which, though desirable and recommended,[13] is not possible in an economic point of view in most of the countries. The guideline and a proposed algorithm by surgeons and microbiologists for infection prevention and use of PPE for patients undergoing surgical intervention also indicate that the ultimate management and use of PPE and enhanced PPE are not different from a known case, a test-positive case, or a suspected case.[13,19]

Having said so and agreed upon that infection can be prevented by applying universal precautionary measures, the "if" factor still remains pertinent. For instance, not all health facilities offering surgery, especially in rural areas in resource-poor countries, can afford to provide/use universal precaution, PPE, although it is mandatory. Again, even when universal precaution is in place, some health workers may not use it (attitudinal), but if they know that the patient is positive for HIV/HBsAg/HCV, they will most likely apply universal precaution before surgery. Moreover, it is not always possible to suspect an asymptomatic case from the history and clinical examination, or history may even be hidden by the patient due to social stigma.

Therefore, these factors must be weighed by the preoperative team and the hospital before considering a policy of routine preoperative viral screening.[13,18] It is agreed that if the patient has a high-risk behavior or risk factors for such diseases, we should do the test. Then, it is no more a routine, but an indicated test. The statement is also pertinent for those patients who are planned for transplant surgeries. For now, the best option would be by indication following a history of risky behavior/exposure, etc., and of course, suspicion from a clinical examination. However, in endemic countries, it can be essential and fruitful to screen HIV, HBsAg, and anti-HCV before surgery. However, this requires resources which endemic countries may not be able to afford. Hence, the tests better are done in those endemic areas, groups, and in patients with risks or a suggestive history. Otherwise, the cost appears to be very high for a country like India or other developing or Third World countries.

Although less, 36.8% of the responders are not practicing the covering of the operating tables and to some extent floor with plastics (with an idea to contain body fluids). Even enhanced PPE is having only one extra pair of goggles. Hence, if all the measures are being already used even in a nonpositive case, a reason to screen each and every patient preoperatively in a routine manner hardly finds a place. Instead, the tests can be done based on the endemic data, risk factors, surgery planned, and clinical parameters.

The present study is limited by the fact that the number of responders was relatively low. Yet, it gives us a good insight into the prevailing practice and opinion, which has the potential to contribute to policymaking not only for India but in all those resource-limited countries which do not have an established policy. Despite the questionnaire being reviewed by a few qualified people before introducing the survey, one leading question remained in the questionnaire. This might have incited biased responses from the participants.

Conclusion

The study highlights the widespread practice of preoperative viral (HBsAg, anti-HCV, and HIV-I and II) testing as routine, and nine out of ten practitioners opine for the mandatory routine practice in India. Although the protocol plays a significant role, it is the practitioners who are more inclined to the routine screening practice. The practice of covering up the operating tables and to some extent even the floor with plastics (with an idea to contain body fluids) is also prevalent in Indian hospitals. A guideline is probably required to help in better decision-making and cost-effective health-care delivery.

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Conflicts of interest

There are no conflicts of interest.

References

1. Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, *et al*. Practice advisory for preanesthesia evaluation: An updated report by the American Society of Anesthesiologists Task Force on preanesthesia evaluation. Anesthesiology 2012;116:522-38.
2. National Guideline Centre (UK). Preoperative Tests (Update): Routine Preoperative Tests for Elective Surgery. NICE Guideline, No. 45. London: National Institute for Health and Care Excellence; 2016. Available from: https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0086571/. [Last accessed on 2018 Jul 27].
3. Centers for Disease Control (CDC). Recommendations for prevention of HIV transmission in health-care settings. MMWR Suppl 1987;36:1S-18S.
4. Karim HM, Yunus M, Bhattacharyya P. An observational cohort study on pre-operative investigations and referrals: How far are we following recommendations? Indian J Anaesth 2016;60:552-9.
5. Reazaul Karim HM, Prakash A, Sahoo SK, Narayan A, Vijayan V. Abnormal routine pre-operative test results and their impact on anaesthetic management: An observational study. Indian J Anaesth 2018;62:23-8.
6. Karim RH, Sahoo SK, Prakash A, Rajaram N, Kumar S, Narayan A.

Abnormal routine preoperative test results and their perioperative anesthetic impact in patients aged 60 years and more: An observational study. Indian Anaesth Forum 2018;19:6-10.
7. National AIDS Control Organization. Annual Reprt 2016-17. New Delhi: Ministry of Health and Family Welfare, Government of India; 2017. Available from: http://naco.gov.in/sites/default/files/NACO%20ANNUAL%20REPORT%202016-17.pdf. [Last accessed on 2018 Jul 28].
8. Karim HM. Practice and reasons for routine pre-operative investigations among anaesthesiologists and surgeons: An online survey. Indian J Anaesth 2017;61:933-5.
9. Böhmer AB, Wappler F, Zwissler B. Preoperative risk assessment-from routine tests to individualized investigation. Dtsch Arztebl Int 2014;111:437-45.
10. Rajaram N, Karim HMR, Prakash A, Sahoo SK, Dhar M, Narayan A. Prevalence and impact of abnormal routine pre-operative test results among elective surgical patients with or without co-morbidity: An observational comparative study. Niger Postgrad Med J 2018;25:121-5.
11. Yazıcı H, Daşkaya H, Doğan S, Haberal İ, Çiftçi T. Patient specific or routine preoperative workup in septoplasty: Which one is cost-effective? Eur Arch Otorhinolaryngol 2014;271:305-9.
12. Sheikh K, Porter JD. "It's 100% for me": Hospital practitioners' perspectives on mandatory HIV testing. Indian J Med Ethics 2009;6:132-7.
13. Smit S. Guidelines for surgery in the HIV patient. Contin Med Educ 2010;28:356-8. Available from: http://www.cmej.org.za/index.php/cmej/article/viewFile/1853/1564. [Last accessed on 2018 Jul 28].
14. Hussain T, Sinha S, Katoch K, Yadav VS, Kulshreshtha KK, Singh I, *et al*. Serum samples from patients with mycobacterial infections cross-react with HIV structural proteins Gp41, p55 and p18. Lepr Rev 2007;78:137-47.
15. Chattopadhya D, Aggarwal RK, Kumari S. Further evaluation of alternative strategy for HIV testing in India. J Commun Dis 1996;28:158-62.
16. Gerberding JL. Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood exposure: Final report from a longitudinal study. J Infect Dis 1994;170:1410-7.
17. Ippolito G, Puro V, De Carli G. The risk of occupational human immunodeficiency virus infection in health care workers. Italian multicenter study. The Italian study group on occupational risk of HIV infection. Arch Intern Med 1993;153:1451-8.
18. Fournier AM, Zeppa R. Preoperative screening for HIV infection. A balanced view for the practicing surgeon. Arch Surg 1989;124:1038-40.
19. Ahmed R, Bhattacharya S. Universal screening versus universal precautions in the context of preoperative screening for HIV, HBV, HCV in India. Indian J Med Microbiol 2013;31:219-25.

Annexure

1. I am a/an

a. Anaesthesiologist

b. Surgeon

c. Community / public health specialist

2. I am working in a/an

a. Autonomous Institute

b. Medical College

c. Private teaching hospital

d. Private hospital

e. Public sector hospital

3. My hospital is located at

a. Metropolitan city

b. Tier-II city

c. District headquarter

d. Semi-urban

4. I am having an experience of

a. < 5 years

b. 5 – 10 years

c. > 10 years

5. Are you / your hospital practicing preoperative viral infection screening routinely?

a. Yes

b. No

c. Not practicing routinely

d. I don’t want but need to do as per hospital protocol

6. Does your hospital have a protocol on this aspect?

a. Yes

b. No

c. Not sure

7. Do you think preoperative viral infection screening should be done routinely?

a. Yes

b. No

c. Not sure

8. If yes OR if you are practicing, what are the tests you are / should be doing?

a. HIV

b. Hepatitis B surface antigen

c. Hepatitis C antibody

d. All

9. In which cases you are doing viral infection screening OR in which case you think that screening should be done?

a. All surgical / invasive procedures

b. Only elective cases

c. Only emergency cases

d. In suspected cases based on the history, risk, local prevalence and clinical findings

10. How many seropositive elective surgical cases you are coming across

a. Less than one per hundred

b. 1- 2 case per hundred

c. 3-5cases per hundred

d. 6 - 10 case per hundred

e. more than 10 cases (one case in every OT list)

11. Do you know that a negative screening test result doesn't rule out infection (in window period)?

a. Yes

b. No

12. (For anaesthesiologist and surgeon)- In positive Cases- are you covering OT tables, OT floor with plastic coverings?

a. Yes

b. No