

Application to the work program

Federal State Budgetary Educational Institution of Higher Education
"Privolzhsky Research Medical University"
Ministry of Health of the Russian Federation

BANK OF ASSESSMENT TOOLS

BASICS OF TRANSPLANTOLOGY

Speciality: **31.05.01 GENERAL MEDICINE**

Department: **FACULTY OF SURGERY AND TRANSPLANTOLOGY**

Form of study: **FULL-TIME**

Nizhny Novgorod
2021

1. Fund of assessment tools for current monitoring of progress, intermediate certification of students in the discipline

This Fund of Evaluation Funds (FOS) for the discipline "Basics of Transplantology" is an integral part of the work program of the discipline "Basics of Transplantology". This FOS is subject to all the details of the approval presented in the RPD for this discipline.

2. List of evaluation tools

To determine the quality of mastering the educational material by students in the discipline " Basics of Transplantology", the following assessment tools are used:

| № | Estimator | Brief description of the evaluation tool | Presentation of the evaluation tool in the FOS |
|---|-----------|---|--|
| 1 | Test | A system of standardized tasks that allows you to automate the procedure measuring the level of knowledge and skills of the student | Test fund assignments |

3. List of competencies indicating the stages of their formation in the process of mastering the educational program and types of assessment tools

| Code and wording of competence | Stage of formation of competence | Controlled sections of the discipline | Evaluation tools |
|--|----------------------------------|--|------------------|
| UC-1,2,3,9 GPC-1,4,5,7 PC-1,2,4,5,6,7,8,14 | Current | Section 1. Introduction to the subject. History of transplantation. Legal framework and organization of transplant care. Organ donation. | |
| | | Topic 1.1. The concept of transplantology and its place in medicine. History of the development of transplantology. The contribution of Russian surgeons to the development of transplantation. Legal, technical and medical aspects of organ transplantation. | Test |
| | | Topic 1.2. Organ donation. Basic concepts. Lifetime and posthumous donation. Diagnosis of brain death of a potential organ donor. Normative-legal documents. Organizational matters. Protocols for diagnostics and conditioning of organs. | Test |
| | | Topic 1.3. Organ explantation. The procedure for the removal, conservation, transportation of organs. Multiorgan explantation of organs. | Test |
| UC-1,2,3,9 GPC-1,4,5,7 PC-1,2,4,5,6,7,8,14 | | Section 2. Liver transplant. Kidney transplant. Basic concepts and schemes of immunosuppressive therapy. | |
| | | Topic 2.1. Kidney transplant. Indications for transplantation. Issues of organization of transplantation and legal aspects of the issue. Examination of a related donor. Kidney extraction technique and organ preservation. Implantation. Operation technique. Management in the postoperative period. Medical therapy. | Test |

| | | | |
|--|--------------|--|------|
| | | Topic 2.2. Liver transplant. Indications for transplantation. Technique for the removal of a fragment of the liver and preservation of the organ. Implantation of a fragment of the liver and the whole organ. Operation technique. Management in the postoperative period. Medical immunosuppressive therapy. | Test |
| UC-1,2,3,9 GPC-1,4,5,7 PC-1,2,4,5,6,7,8,14 | | Section 3. Transplantation of the pancreas, heart, lungs. Cell technologies and perspectives of transplantation | Test |
| | | Topic 3.1. Pancreas transplant. Indications for transplantation. transplant technique. Management in the postoperative period. Heart transplant. Indications for transplantation. transplant technique. Management in the postoperative period. Lung transplant. Transplantation of the heart-lung complex. Indications for transplantation. transplant technique. Management in the postoperative period. The results of organ transplantation. Complications. The concepts of graft survival, recipient survival. Prospects for organ transplantation. Increase in donor activity. | Test |
| | | Topic 3.2. Cellular technologies in transplantology. Goals and objectives, achievements at the present stage of development. | Test |
| UC-1,2,3,9 GPC-1,4,5,7 PC-1,2,4,5,6,7,8,14 | Intermediate | Section 1. Introduction to the subject. History of transplantation. Legal framework and organization of transplant care. Organ donation. Section 2. Liver transplant. Kidney transplant. Basic concepts and schemes of immunosuppressive therapy. Section 3. Transplantation of the pancreas, heart, lungs. Cell technologies and perspectives of transplantation | Test |

4. The content of the evaluation means of current control

Current control is carried out by the teacher of the discipline when conducting classes in the form of: testing.

4.1. Test questions for assessing competencies: UC-1, UC-2, UC-3, UC-9, GPC-1, GPC-4, GPC-5, GPC-7, PC-1, PC-2, PC-4, PC-5, PC-6, PC-7, PC-8, PC-14

1. Which of the immunosuppressants is hepatotoxic?
 1. Corticosteroids
 2. Tacrolimus
 3. Cyclosporine
 4. Azathioprine

2. What is the graft mass ratio in liver transplantation?
 1. Standard liver volume per body surface
 2. Liver mass per body surface
 3. Total body weight per liver volume
 4. Graft weight per ideal liver weight

3. What method of research exhibits acute cellular rejection?
 1. Laboratory
 2. Immunological
 3. Morphological
 4. Instrumental

4. What are the dangers of prescribing high doses of immunosuppressive drugs?
 1. The development of a rejection crisis
 2. The development of graft dysfunction
 3. The development of infections
 4. The development of immunodeficiency

5. What is pulse therapy?
 1. Increasing the dose of immunosuppressants
 2. Administration of high doses of corticosteroids
 3. Purpose of extracorporeal detoxification
 4. Administration of polyclonal antibodies

6. What is the danger of the development of cytomegalovirus infection?
 1. risk of chronic graft rejection
 2. the threat of cardiovascular insufficiency due to the pathological effect of the virus on the myocardium
 3. risk of DIC
 4. bone marrow depression

7. When is multi-organ organ harvesting performed from a donor?
 1. with biological death
 2. with clinical death
 3. at brain death
 4. with a coma of the first degree

8. Methods of long-term preservation of donor organs.
 1. Physical - hypothermic
 2. Physical - hyperthermic
 3. Chemical
 4. Method of perfusion of a donor organ with chilled blood (350-400 ml) of the recipient

9. Optimal temperature parameters for long-term preservation of donor organs
 1. from +3 to +5° C
 2. from +15 to - 15° C
 3. from +20 to +38° C
 4. from -15 to +22° C

10. Reperfusion damage to a donor organ occurs:
 1. immediately after the explantation of the donor organ before its implantation in the recipient
 2. during the conservation of the donor organ
 3. after the inclusion of the donor organ into the bloodstream of the recipient
 4. after receiving immunosuppressive drugs by the recipient in the post-transplant period

11. Heterotopic transplantation is:
 1. when the graft is placed in place of the same missing removed organ or tissue
 2. when the graft is placed in an unusual place
 3. when cells from a donor transplant are transplanted into the tissue of an organ of the recipient identical to the transplant (eg, cells from a donor pancreas into the tissue of the recipient's pancreas)
 4. when the graft, divided into 2-3 parts, is transplanted to 2-3 recipients respectively

12. Orthotopic transplantation is:

1. when a graft is placed in place of the same missing or removed organ or tissue
2. when the graft is placed in an unusual place
3. when cells from a donor transplant are transplanted into the tissue of an organ of the recipient identical to the transplant (eg, cells from a donor pancreas into the tissue of the recipient's pancreas)
4. when the graft, divided into 2-3 parts, is transplanted to 2-3 recipients respectively

13. What can not be attributed to the main surgical complications after kidney transplantation:

1. bleeding from areas of surgical intervention
2. obstruction of the vesicoureteral anastomosis
3. stenosis of the vascular anastomosis
4. hyperacute graft rejection

14. What can not be attributed to the main surgical complications after liver transplantation:

1. bleeding from areas of surgical intervention
2. obstruction of the biliary tract
3. stenosis of the vascular anastomosis
4. hyperacute graft rejection

15. What cannot be attributed to the main surgical complications after pancreas transplantation:

1. bleeding from areas of surgical intervention
2. failure of deodeno-jejunosomy
3. stenosis of the vascular anastomosis
4. hyperacute graft rejection

16. At what stage of donor organ transplantation is it necessary to use primary immunosuppressive therapy in the recipient?

1. immediately after the graft is included in the general circulation of the recipient
2. in the immediate period after transplantation of a donor organ
3. 24 - 48 hours before transplantation of a donor organ
4. not earlier than 30 minutes before organ transplantation

17. The adequacy of the therapy for a patient after transplantation of a donor organ is assessed by the following criteria:

1. pathomorphological examination of the biopsy material of the graft
2. regular determination of the concentration of cyclosporine A in the blood serum of the recipient
3. interpretation of general blood and urine tests, regular determination of the concentration of tacrolimus in the recipient's blood serum, pathological examination of the graft biopsy material, ultrasonography with graft Dopplerography, X-ray contrast study of the graft
4. Interpretation of blood and urine tests, regular determination of the concentration of tacrolimus in the recipient's blood serum, pathological examination of the graft biopsy material, ultrasonography with graft Dopplerography

18. For the histopathological picture of the biopsy material of the donor kidney in acute rejection, the following is most characteristic:

1. acute tubular necrosis, vasculitis, lymphocyte infiltration
2. interstitial fibrosis, tubular atrophy, glomerular sclerosis
3. ischemic necrosis, fibrin thrombosis, necrosis of vessel walls

19. What is optional in the set of criteria for establishing a diagnosis of brain death.

1. complete and persistent lack of consciousness (coma), atony of all muscles
 2. cyanosis of the nasolabial triangle
 3. lack of pupillary response to direct bright light, immobility of the eyeballs
 4. lack of electrical activity of the brain during an electroencephalographic study
20. The effectiveness and satisfactory outcome of the upcoming transplant recipient depends on:
1. influence on the function of a donor organ in the body of a donor patient with a confirmed brain death by pathogenetically substantiated therapeutic measures
 2. solving problems related to the acceleration of organizational issues at the stages of assessing the patient of a potential donor, the tactics of its management, conditioning, and directly the collection and conservation of donor organs
 3. on the quality of the performed perfusion and conservation of the donor organ during its explantation
 4. all of the above options are correct
21. The following antigens belong to the first class of the HLA system, except:
1. A
 2. B
 3. C
 4. DR
22. The following antigens belong to the second class of the HLA system, except:
1. DQ
 2. DP
 3. C
 4. DR
23. Calcineurin inhibitors do not include all of the following immunosuppressants except:
1. Methylprednisolone
 2. Cyclosporin A
 3. CellCept (Mycophenolate Mofetil)
 4. Azathioprine
24. Lymphocyte proliferation inhibitors do not include all of the following immunosuppressants except:
1. Methylprednisolone
 2. Tacrolimus (Prograf)
 3. CellCept (Mycophenolate Mofetil)
 4. Azathioprine
25. The main side effect of Cyclosporine A:
1. Nephrotoxicity
 2. Rhinotoxicity
 3. Ototoxicity
 4. Neurotoxicity
26. Organic preservative solutions include all of the following except:
1. Custodiol (HTK)
 2. Viaspan (UW)
 3. Euro Collins (EC)
 4. Omnipac

27. The indication for pancreatic transplantation is:
1. Acute hemorrhagic pancreatitis
 2. Type 1 diabetes
 3. Malignant tumor of the pancreas
 4. Obstruction of the Wirsung duct of the pancreas
28. The indication for transplantation of the pancreas-kidney complex is:
1. Diabetes mellitus type 1 with nephropathy in the terminal stage of chronic renal failure
 2. Acute pancreatitis in combination with chronic glomerulonephritis in the terminal stage of chronic renal failure
 3. Malignant tumor of the pancreas in combination with chronic glomerulonephritis in the terminal stage of chronic renal failure
29. A contraindication for liver transplantation is
1. Incompatibility by blood type and Rh factor
 2. Incompatibility according to the HLA system
 3. Diversity of donor and recipient
 4. Cirrhosis of the liver against the background of viral hepatitis B in a recipient
30. What test is not performed on a donor before transplantation of a part of the liver from a living donor?
1. Angiography of the liver vessels
 2. Ultrasound of the liver
 3. Biochemical blood test
 4. Retrograde pyelography
31. The most common causes of death in an organ transplant recipient include all of the following except:
1. Cardiovascular disease
 2. Malignancy
 3. Infections
 4. Diseases of the musculoskeletal system
32. When transplanting the pancreas with drainage of exogenous secretion into the bladder, the level of amylase is determined:
1. in the blood
 2. in the urine
 3. both in blood and urine
 4. determination of amylase is not possible
33. A recipient at high immunological risk for a proposed organ transplant includes all of the following except:
1. recipient with a history of blood transfusions
 2. a recipient with a history of organ transplantation
 3. a recipient who has a positive "cross-match" reaction during primary typing with leukocytes from a prospective "live" donor
 4. recipients with a history of acute hematogenous osteomyelitis of the ilium
34. A recipient at high immunological risk for a proposed organ transplant includes:
1. recipient who had an acute respiratory viral infection
 2. a recipient with a history of organ transplantation
 3. recipient who suffered a fracture of tubular bones

4. recipient with a history of acute hematogenous osteomyelitis of the ilium
35. Permissible duration of cold ischemia for human donor liver.
1. 6-8 hours
 2. 12-24 hours
 3. 24-32 hours
 4. 32-48 hours
36. The main purpose of the cold method of preservation for long-term storage of a donor organ is:
1. suppression of immune complexes in the donor organ to prevent graft-versus-host disease after transplantation
 2. increase in the formation of free oxygen radicals for adequate oxygenation of the donor organ after transplantation
 3. reduction of apoptosis and necrosis, as well as suppression of metabolism, metabolic processes in cells, tissues of the donor organ
 4. lysis of donor blood cells in the organ
37. Perfusion with a preserving solution of a donor kidney during explantation is carried out through:
1. renal vein
 2. renal artery
 3. ureter
 4. simultaneously through the renal artery and ureter
38. What vessel thrombosis most often occurs after kidney transplantation?
1. renal vein
 2. renal artery
 3. vessels of the ureter
 4. vessels of the pyelourethral segment
39. For the serological method for assessing the biological histocompatibility of the recipient and donor, blood components are used:
1. platelets
 2. erythrocytes
 3. lymphocytes
 4. monocytes
40. The production of antibodies to antigens of the HLA system occurs in all of the following cases, except:
1. pregnancy
 2. blood transfusion
 3. transplantation
 4. sepsis
41. What diseases are prevented after liver transplantation?
1. CMV infection
 2. Peptic ulcer of the stomach and 12 p.k.
 3. Pneumonia
 4. Calculous cholecystitis

42. The most common causes of death in an organ transplant recipient include all of the following except:
1. Cardiovascular disease
 2. Malignancy
 3. Infections
 4. Diseases of the musculoskeletal system
43. Reperfusion (inclusion of the donor organ into the general circulation of the recipient) contributes to:
1. the formation of free oxygen radicals in the cells of the body
 2. inhibition of the formation of free oxygen radicals in the cells of the body
 3. formation of aggressive immune complexes
 4. inhibition of the formation of aggressive immune complexes
44. Contraindications for the collection of a donor kidney are:
1. proteinuria more than 1.0 g per ml
 2. tubular reabsorption up to 98%
 3. blood creatinine level up to 0.16 mmol/l
 4. cylindruria up to 10-20 in the field of view
45. An absolute contraindication for cadaveric kidney donation is:
1. addiction
 2. chronic tonsillitis
 3. chronic cholecystitis
 4. age \leq 55 years old
46. What type of extracorporeal detoxification is used in a rejection crisis?
1. Plasmapheresis
 2. Hemodialysis
 3. Hemosorption
 4. Ultrafiltration
47. An absolute contraindication for cadaveric kidney donation is:
1. detection of HIV infection
 2. chronic tonsillitis
 3. chronic cholecystitis
 4. age \leq 55 years old
48. In what cases is pulse therapy with steroids used?
1. with acute rejection of a kidney transplant
 2. for the prevention of cytomegalovirus infection
 3. 1 month before kidney transplantation to prevent rejection
 4. at the donor before organ explantation
49. Who was the first to perform orthotopic liver transplantation?
1. C.S. Welch
 2. J. Michouler
 3. T.E. Starzl
 4. F. Moore
50. What is Split Operation - Liver Transplant?

1. division of the donor liver into parts for the purpose of transplantation to two or more recipients
2. liver transplantation to an atypical place for an organ
3. the case when a recipient suffering from amyloidosis undergoes an orthotopic transplantation of a donor liver, and his liver is transplanted to another recipient
4. transplantation of fetal hepatocytes into the parenchyma of the affected liver

| № test task | № response standard | № test task | № response standard | № test task | № response standard |
|-------------|---------------------|-------------|---------------------|-------------|---------------------|
| 1 | 3 | 21 | 3 | 41 | 4 |
| 2 | 4 | 22 | 3 | 42 | 4 |
| 3 | 3 | 23 | 2 | 43 | 1 |
| 4 | 2 | 24 | 3 | 44 | 1 |
| 5 | 2 | 25 | 1 | 45 | 1 |
| 6 | 1 | 26 | 4 | 46 | 1 |
| 7 | 3 | 27 | 2 | 47 | 1 |
| 8 | 1 | 28 | 1 | 48 | 1 |
| 9 | 1 | 29 | 1 | 49 | 3 |
| 10 | 3 | 30 | 4 | 50 | 1 |
| 11 | 2 | 31 | 4 | | |
| 12 | 1 | 32 | 2 | | |
| 13 | 4 | 33 | 4 | | |
| 14 | 4 | 34 | 2 | | |
| 15 | 4 | 35 | 1 | | |
| 16 | 4 | 36 | 3 | | |
| 17 | 4 | 37 | 2 | | |
| 18 | 1 | 38 | 1 | | |
| 19 | 2 | 39 | 3 | | |
| 20 | 4 | 40 | 4 | | |

5. The content of the evaluation means of intermediate certification

Intermediate certification is carried out in the form of testing

5.1 List of control tasks and other materials necessary for assessing knowledge, skills and experience: tests (see paragraph 4.1)

5. Criteria for evaluating learning outcomes

For testing:

Rating "5" (Excellent) - points (100-90%)

Rating "4" (Good) - points (89-80%)

Grade "3" (Satisfactory) - points (79-70%)

Less than 70% - (Unsatisfactory) - Grade "2"

A complete set of assessment tools for the discipline "Fundamentals of Transplantology" is presented on the portal of the LMS of the Volga Research Medical University <https://sdo.pimunn.net/course/view.php?id=2516>

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