

भारतीय उपचर्या परिषद्

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INDIAN NURSING COUNCIL

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स्वास्थ्य एवं परिवार कल्याण मंत्रालय के तहत सांविधिक निकाय  
Statutory Body under the Ministry of Health & Family Welfare

**Draft Notification of Nurse Practitioner in Transplant Nursing Post Graduate  
Residency Program**

General Public is hereby informed that the Indian Nursing Council has drafted “**Nurse Practitioner in Transplant Nursing Post Graduate Residency Programme**” Accordingly, draft notification has been prepared and is attached for comments of the General Public/Stakeholders. Comments may be furnished via email [secy.inc@gov.in](mailto:secy.inc@gov.in) within 20 (twenty) days of uploading of this notice.

Yours faithfully,

**Lt Col (Dr) Sarvjeet Kaur**  
Secretary, INC

Encl: As above

**THE GAZETTE OF INDIA EXTRAORDINARY  
PART III—SECTION 4  
PUBLISHED BY AUTHORITY  
(TO BE GAZETTED)**

**INDIAN NURSING COUNCIL  
8<sup>th</sup> Floor, NBCC Centre, Plot No. 2, Community Centre  
Okhla Phase-1, New Delhi-110020**

**NOTIFICATION**

New Delhi, Dated \_\_\_\_\_, 2023

**INDIAN NURSING COUNCIL (NURSE PRACTITIONER IN TRANSPLANT NURSING POST  
GRADUATE RESIDENCY PROGRAM**

**F.No. 11-1/2022-INC:**—In exercise of the powers conferred by sub-section (1) of Section 16 of Indian Nursing Council Act, 1947 (XLVIII of 1947), as amended from time to time, the Indian Nursing Council hereby makes the following regulations, namely:—

**1. SHORT TITLE AND COMMENCEMENT**

- i. These Regulations may be called the **Indian Nursing Council (Nurse Practitioner in Transplant Nursing Post Graduate Residency Program 2022)**.
- ii. These shall come into force on the date of notification of the same in the Official Gazette of India.

**2. DEFINITIONS**

In these Regulations, unless the context otherwise requires,

- i. ‘the Act’ means the Indian Nursing Council Act, 1947 (XLVIII of 1947) as amended from time to time;
- ii. ‘the Council’ means the Indian Nursing Council constituted under the Act;
- iii. ‘SNRC’ means the State Nurse and Midwives Registration Council, by whichever name constituted, by the respective State Governments;
- iv. ‘RN & RM’ means a Registered Nurse and Registered Midwife (RN & RM) and denotes a nurse who has completed successfully, recognised Bachelor of Nursing (B.Sc. Nursing) or Diploma in General Nursing and Midwifery (GNM) course, as prescribed by the Council and is registered in a SNRC as Registered Nurse and Registered Midwife;
- v. ‘Nurses Registration & Tracking System (NRTS)’ means a system developed by the Council and software developed in association with National Informatics Centre (NIC), Government of India, and hosted by NIC for the purpose of maintenance and operation of the Indian Nurses Register. It has standardised forms for collection of the data of Registered Nurse and Registered Midwife (RN & RM)/ Registered Auxiliary Nurse Midwife (RANM)/Registered Lady Health Visitor (RLHV) upon Aadhar based biometric authentication;
- vi. ‘NUID’ is the Nurses Unique Identification Number given to the registrants in the NRTS system;
- vii. ‘General Nursing and Midwifery (GNM)’ means Diploma in General Nursing and Midwifery qualification recognized by the Council under Section 10 of the Act and included in Part-I of the Schedule of the Act.

**NURSE PRACTITIONER IN TRANSPLANT NURSING  
POST GRADUATE RESIDENCY PROGRAM**

**I. Introduction and Background**

In India, reshaping health systems in all dimensions of health has been recognized as an important need in the National Health Policy, 2017. (NHP, 2017 draft document). It emphasizes human resource development in the

areas of education and training alongside regulation and legislation. The government recognizes significant expansion in tertiary care services both in public and private health sectors. In building their capacity, it's highly significant that the health care professionals require advanced educational preparation in specialty and super-specialty services. To support specialized and super-specialized healthcare services, specialist nurses with advanced preparation are essential. Developing training programs and curriculum in tertiary care is recognized as the need of the hour. Nurse practitioners (NPs) will be able to meet this demand provided they are well trained and empowered to practice. With establishment of new cadres in the center and state level, master level prepared NPs will be able to provide cost effective, competent, safe, and quality driven specialized nursing care to patients in the transplant settings in tertiary care centers. Nurse practitioners have been prepared and functioning in USA since 1960s, UK since 1980s, Australia since 1990s and Netherlands since 2010.

Nurse practitioners in transplant sciences, acute care, oncology, emergency care, neurology, cardiovascular, anesthesia and other specialties can be prepared to function in tertiary care settings. Rigorous educational preparation will enable them to work collaboratively to promote organ donation, prevent organ rejection and to promote donor and recipient's health. A curricular structure / framework is proposed by INC towards preparation of Nurse Practitioner in Organ Transplant Nursing (NPTN) Sciences (NPOTS) at master's Level. The special feature of this program is that it's a clinical residency program emphasizing a strong clinical component with 15% of theoretical instruction and 85% of practicum. Competency based training is the major approach and NP education is based on competencies adapted from International Council of Nurses (ICN, 2020), National Organization of Nurse Practitioner Faculties-NONPF, (2022), and AACN, (2021). Every course is based on achievement of pertinent competencies specific to that level.

Nurse Practitioner in Transplant Nursing (NPTN) is intended to prepare registered BSc Nurses to provide advanced nursing care to organ donors and recipients. The nursing care is focused on stabilizing patients' condition, preventing acute complications and maximizing restoration of health. These NPs are required to practice in the transplant care units. The program consists of various courses of study that are based on strong scientific foundations including evidenced based practice and the management of complex health systems. These are built upon the theoretical and practice competencies of BSc trained nurses. On completion of the program and registration with respective state council they are authorized to practice all competencies listed in the logbook of INC syllabus and independently perform donor and recipient assessment, order diagnostic tests, perform diagnostic and therapeutic procedures, handle medical equipment, administer drugs and therapies as per institutional protocols / standing orders. While exercising this authority, the NPs in Transplant Nursing are accountable for demonstrating competencies in

- a. Assisting in donor and recipient selection
- b. Preparation of donor, recipient, and families for transplantation
- c. Patient admission into the transplant units, transfer to ICU / wards and discharge
- d. Early identification of organ rejection / complications through appropriate assessment
- e. Management of complications and untoward reactions
- f. Selection / administration of medication or devices or therapies
- g. Monitoring of patients' response to immunosuppressive therapy
- h. Patients' education for use of immunosuppressive therapy, prevention / early identification of organ rejection
- i. Knowledge of interactions of therapeutics if any
- j. Evaluation of outcomes
- k. Contribution towards evidence-based innovations in clinical practice
- l. Participation in Government and nongovernmental activities in promoting organ donation & transplantation

The NP in Transplant Nursing is prepared and qualified to assume responsibility and accountability for the care of donors and recipients under his/ her care. The said post graduate degree will be registered as an additional qualification by the State Nursing Registration Council.

Philosophy

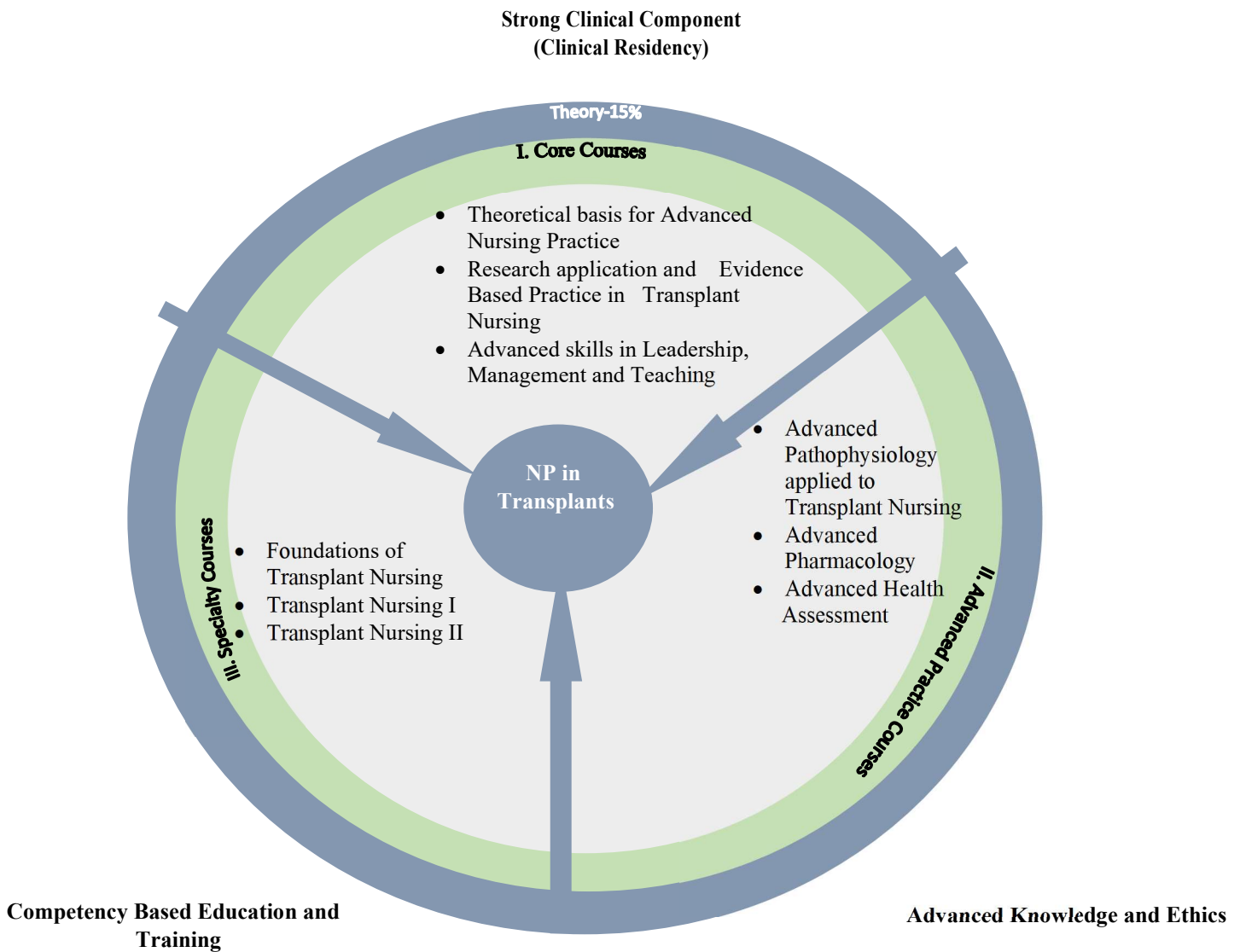
Indian Nursing Council believes that there is a great need to establish a postgraduate program titled Nurse Practitioner in Transplant Nursing to meet the challenges and demands of tertiary health care services in India which is reflected in the National Health Policy (2017) to provide quality care to patients requiring organ transplant and their families.

INC believes that postgraduates from a residency program focused on strong clinical component and competency-based training must be able to demonstrate clinical competence based on sound theoretical and evidence-based knowledge. The teaching learning approach should focus on adult learning principles, competency-based education, collaborative learning, preceptored clinical learning with medical and nursing preceptors, experiential learning, and self-directed learning. Education providers/preceptors/mentors must update their current knowledge and practices. Medical faculty are invited to participate as preceptors in the training.

INC also believes that a variety of educational strategies can be used in the clinical settings to address the deficit of qualified Transplant nursing faculty. It is hoped to facilitate developing policies towards registration/licensure and create cadre positions for appropriate placement of these postgraduate Transplant Nursing NPs to function in Transplant care Unit / Department of tertiary care centers.

An educational framework for the NP curriculum is proposed as follows: (See Figure 1).

**Figure1. Nurse Practitioner in Transplant Nursing – An Educational Curricular Framework**



Refer NPCC framework for the figure to complete it

## II. Program Description

This program is designed to assist students in developing expertise and in-depth understanding in the field of transplant Nursing. It will help students to develop advanced skills for nursing intervention in transplant Nursing. It will enable the student to function as Transplant coordinator nurse/specialist. It will further enable the student to function as educator, manager and researcher in the field of transplant Nursing.

The NP program is a Nursing residency program with a focus on Competency based training. The duration is of two years with the curriculum consisting of theory that includes core courses, advanced practice courses and clinical courses besides clinical practicum which is a major component (Refer Curricular framework).

## III. Aim

The Organ Transplant Nursing NP in Transplant Nursing program prepares registered BSc nurses for advanced practice roles as clinical experts, managers, educators and consultants leading to M.Sc. degree in NP in Transplant Nursing and MSc Nursing (NP in Transplant Nursing)

## IV. Objectives

On completion of the program, the NP will be able to

1. Assume responsibility and accountability to provide competent care to donors and recipients and family centered care in transplant care settings
2. Demonstrate clinical competence / expertise in providing transplant care which includes donor and recipient assessment, education, diagnostic reasoning, complex monitoring, and therapies of donors & recipients, and liaising with resource agencies.
3. Apply theoretical, patho-physiological and pharmacological principles and evidence base in implementing therapies / interventions in transplant care
4. Identify the conditions requiring transplant using differential diagnosis and carry out treatment/interventions to stabilize and restore patient's health and minimize or manage complications independently or collaboratively as a part of transplant care team
5. Collaborate with other health care professionals in the transplant care team, across the continuum of transplant care

## V. Minimum requirements to start the NP in Transplant Nursing program

The institution must accept the accountability for the NP program and its students and offer the program congruent with the INC standards. It must fulfill the following requirements.

1. Essentiality Certificate
  - a. Any institution who wishes to start NP program shall obtain Essentiality Certificate / Government Order from State.
  - b. The following institutions are exempted from obtaining Essentiality Certificate.
    - i. Institutions/Universities already offering B.Sc. (Nursing) or M.Sc. (Nursing) programs.
    - ii. Institutions/Universities offering MBBS/DNB programs.
2. Hospital

The hospital should be a parent tertiary care centre with transplant care centers, with a minimum of 200 beds. It must have a transplant unit. It would be suitable to have Medical College or Nursing College affiliated to the hospital.
3. Transplant unit Beds

The hospital should have a transplant unit with a minimum of 10 beds and performing 50 transplants per year
4. Transplant unit staffing
  - a. Transplant unit should have a charge nurse with BSc or MSc qualification
  - b. The nurse patient ratio should be 1:1 for the acute care unit
  - c. For the remaining beds the nurse patient ratio should be 1:6 for every shift
  - d. There must be provision of additional 40% trained nursing staff towards leave reserve

- e. Doctor patient ratio can be 1:5
  - 5. Faculty / Staff resources
    - a. Clinical area:
      - i. Nursing Preceptor: Full time qualified GNM with 6 years of experience in Transplant unit or B.Sc. (Nursing) with 2 years' experience in transplant unit or M.Sc. in Medical Surgical Nursing /Pediatric Nursing with one year transplant unit experience.
      - ii. Medical Preceptor: Medical PG/Intensivist/Transplant Physician
      - iii. Preceptor student ratio: Nursing 1:10, Medical 1:10 (Every student must have a medical and nursing preceptor).
    - b. Teaching faculty:
      - i. Professor/Associate Professor – 1 (Teaching experience: 5 years post PG) – M.Sc. in Medical Surgical Nursing/Pediatric Nursing (One faculty for every 10 students).
      - ii. Assistant Professor – 1 (Experience: 3 years post M.Sc. N).
    - c. The above faculty shall perform dual role or be senior nurses with MSc qualification employed in the transplant unit.
    - d. Guest lecturers: for pharmacology, pathophysiology, and organ transplantation.
  - 6. Physical and learning resources at hospital/college
    - a. One classroom/conference room at the clinical area
    - b. Skill lab for simulated learning (hospital/college)
    - c. Library and computer facilities with access to online journals
    - d. E-Learning facilities
  - 7. List of equipment for Transplant unit (enclosed) Appendix – 1
  - 8. Student Recruitment/Admission Requirements
    - a. Applicants must possess a registered B.Sc./ PB.B.Sc. qualification with a minimum of one-year clinical experience, preferably in any transplant setting prior to enrollment.
    - b. Must have undergone the B.Sc. (Nursing) in an institution found suitable by the Indian Nursing Council and have been registered by the respective State Nursing Council.
    - c. Must have scored not less than 55% aggregate marks in the B.Sc. program.
    - d. Selection must be based on the merit of an entrance examination and interview held by the competent authority.
    - e. Must be physically fit.
- Number of candidates: 1 candidate for 4 – 5 transplant unit beds
- Salary
- 1. In-service candidates will get regular salary
  - 2. Stipend/Salary for the other candidates as per the salary structure of the hospital where the course is conducted

## **VI. Examination Regulations**

*Eligibility for appearing for the examination*

*Attendance:* Minimum 80% for Theory and practical before appearing for final university examination but must complete 100% in practical before the award of degree.

There is no minimum cut off for Internal assessment marks, as internal and external marks are added together for declaring pass.

*Examining and degree awarding authority:* Respective University.

Declaration of Results

The candidate is declared to have passed the exam if the score is 60% and above. This score is the aggregate of both internal and external university examination in theory and practical in every course/subject and less than 60% is fail.

For calculating the rank, the aggregate of the two years' marks will be considered.

If a candidate fails in theory or practical, he/she must appear for the paper in which he/she has failed.

Rank will not be declared for candidates who fail in any subject. Maximum period to complete the program is 4 years.

#### *Practical Examination*

OSCE type of examination is to be followed alongside viva (oral examination) – Refer OSCE Guidelines found in Appendix-2.

Maximum number of students for practical exam per day is 10 students. Examination is to be held in clinical area only.

The team of three practical examiners will include

- i. one internal examiner {M.Sc. faculty with two years of experiences in teaching the NPTN program/M.Sc. faculty (Medical Surgical Nursing preferable) with 5 years of post PG experience}
- ii. one external examiner (same as above)
- iii. one medical internal examiner who should have served as preceptor for NPTN program. The examiner should be MSc faculty teaching the NP program with minimum two years of experience.

#### *Dissertation*

Research guides: Main guide – Nursing faculty (3 years Post PG experience) teaching NP program, Co-guide: Medical preceptor.

Submission of research proposal: 6 – 9 months after date of admission in the first year

Guide student ratio: 1:5

Research committee: There shall be a separate research committee in the college/hospital to guide and oversee the progress of the research {minimum of 5 members with principal or CNO who is M.Sc. (Nursing) qualified}.

Ethical clearance must be obtained by the Institutional Review board / Hospital Ethics committee since it involves clinical research.

Topic selection: The topic should be relevant to transplant nursing that will add knowledge or evidence for nursing intervention. The research should be conducted in any of the transplant settings.

Data collection: 7 weeks are allotted for data collection, which can be integrated during clinical experience after 6 months in first year and before 6 months in second year.

Writing the research report: 6-9 months in second year.

Submission of Dissertation final: 3 months before completion of the second year.

#### *Dissertation Examination*

Internal assessment: Viva & Dissertation report = 50 marks

University examination: Viva & Dissertation report = 50 marks

{Marking guide used for other M.Sc. (Nursing) specialties can be used for evaluation}.

### **VII. Assessment (Formative and Summative)**

- Test paper, quiz
- Seminar
- Written assignments/Term papers
- Case study /Clinical presentation
- Clinical and care pathway/Case study report
- Drug studies
- Clinical performance evaluation
- Objective Structured Clinical Examination (OSCE)

Assessment Guidelines: (Appendix-2)

### Scheme of Final Examination

SN	Title	Theory%			Practical %		
		Hours	Internal	External	Hours	Internal	External
<b>FIRST YEAR</b>							
<b>Core Courses</b>							
1	Theoretical Basis for Advanced Practice Nursing	2 hrs	50				
2	Research Application and Evidence Based Practice in Transplant Nursing	3 hrs	30	70			
3	Advanced skills in Leadership, Management and Teaching Skills	3 hrs	30	70			
<b>Advanced Practice Courses</b>							
4	Advanced Pathophysiology, Advanced Pharmacology applied to Transplant Nursing	3 hrs	30	70			
5	Advanced Health / Physical Assessment	3 hrs	30	70		50	50
<b>SECOND YEAR</b>							
<b>Specialty Courses</b>							
1	Foundation of Transplant Nursing Practice	3 hrs	30	70		100	100
2	Transplant Nursing I	3 hrs	30	70		100	100
3	Transplant Nursing II	3 hrs	30	70		100	100
4	Dissertation and viva	3 hrs				50	50

### VIII. Curriculum

#### COURSES OF INSTRUCTION

SN	Subjects	Theory (Hrs)	Lab/Skill Lab (Hrs)	Clinical (Hrs)
<b>FIRST YEAR</b>				
<b>Core Courses</b>				
I	Theoretical Basis for Advanced Practice Nursing	40		
II	Research Application and Evidence Based Practice in Transplant science	56	24	336 (7 wks)
III	Advanced skills in Leadership, Management and Teaching Skills	56	24	192 (4 wks)
<b>Advanced Practice Courses</b>				
IV	Advanced Pathophysiology applied to transplant nursing	60		336 (7 wks)



V	Advanced Pharmacology applied to transplant nursing	54		336 (7 wks)
VI	Advanced Health/physical Assessment	70	48	576 (12 wks)
TOTAL = 2208		<b>336 (7wks)</b>	<b>96 (2 wks)</b>	1776 (37 wks)
<b>SECOND YEAR</b>				
<b>Specialty Course</b>				
VII	Foundation of Transplant Nursing Practice	96	48	576 (12 wks)
VIII	Transplant Nursing I	96	48	576 (12 wks)
IX	Transplant Nursing II	96	48	624 (13 wks)
TOTAL = 2208		<b>288 (6 wks)</b>	<b>144 (3wks)</b>	1776 (37 wks)

**No of weeks available in a year = 52 - 6 (Annual leave, Casual leave, sick leave = 6 weeks) = 46 weeks x 48 hrs = 2208 hrs**

**Two years = 4416 hrs (Examination during clinical posting)**

**Instructional Hours: Theory = 624hrs, Skill lab= 240hrs, Clinical =3552hrs TOTAL= 4416 hrs**

**I year : 336-96-1776hrs (Theory-skill lab-clinical) [Theory = 15 %, Skill lab & Clinical=85%]**

**II year : 288-144-1776hrs (Theory-skill lab - clinical ) [Theory = 15%, Skill - Clinical=85%]**

**I YEAR =46 weeks/ 2208 hrs(46x48hrs)( Theory +Lab :7.5 hrs/week for 44wks =336+96 hrs\*)**

**\*Theory + Lab= 96 hrs can be given for 2wks in the form of introductory block classes and workshops**

**II YEAR=46 weeks/ 2208 hrs (46x48hrs) ( Theory +Lab : 8.5hrs/week for 45wks=384+48hrs)**

**(1 week Block classes = 48 hrs)**

## CLINICAL PRACTICE

A. Clinical Residency experience (A minimum of 48 hrs/ week is prescribed, however, it is flexible with different shifts and OFF followed by on call duty )

B. 8 hours duty with one day Off in a week and on call duty one per week

### Clinical placements:

I year: 44 wks (excludes 2 weeks of introductory block classes and workshop)

- Transplant OPD - 4
- Pre – transplant unit - 4
- Post transplant ward - 4
- Diagnostic Department - 2
- Transplant ICU - 8
- Step down ICU - 6
- Transplant OT - 8
- Donor care unit (ICU / Emergency unit) - 8

II year: 45 wks (excludes one week of introductory block classes)

- Heart Lung transplant unit - 7
- Renal transplant unit - 8
- Liver, Pancreas, Intestine, transplant unit - 10
- Bone Marrow transplant unit - 8
- Eye transplant unit - 2
- Dialysis unit - 2
- Transplant OPD - 2
- Paediatric transplant unit - 6

**C. Teaching methods:**

Teaching-theoretical, lab & Clinical can be done in the following methods and integrated during clinical posting

- Experiential learning
- Reflective learning
- Simulation
- Clinical conference
- Case/clinical presentation
- In depth drug study, presentation, and report
- Nursing rounds
- Clinical seminars
- Journal clubs
- Case study/Nursing process
- Advanced health assessment
- Faculty lecture in the clinical area
- Directed reading
- Assignments
- Case study analysis
- Workshops

**D. Procedures/log book**

At the end of each clinical posting, clinical logbook (Specific procedural competencies/Clinical skills) (Appendix 3) and clinical requirements (Appendix 4) are to be updated and signed by the preceptor.

**E. Institutional Protocol / standing orders based administration of drugs & ordering of investigations and therapies**

The students will be trained to independently to perform donor, and recipient assessment, order diagnostic tests, perform diagnostic and therapeutic procedures, handle medical equipment, administer drugs and therapies as per institutional protocols/standing orders. (Appendix 5 Standing orders). Administration of emergency drugs is carried out in consultation with concerned physicians and endorsed later by written orders.

**Implementation of curriculum-A tentative plan**

I yr. Courses	Introductory classes	Workshop	Theory integrated in clinical practicum	Methods of teaching (Topic can be specified)
1. Theoretical basis for Advanced practice Nursing (40)	8hrs		1x32=32hrs	<ul style="list-style-type: none"> <li>• Seminar / Theory application</li> <li>Lecture (faculty)</li> </ul>
2. Research Application and Evidence Based Practice in Transplant Nursing (56+24)	8hrs	40 (5days) +8hrs	1x24=24hrs	<ul style="list-style-type: none"> <li>• Research study analysis/ Exercise / Assignment (lab)</li> </ul>
3. Advanced skills in leadership, Management and Teaching (56+24)	12+2hrs		1x26=26hrs 2.5x16=40hrs	<ul style="list-style-type: none"> <li>• Clinical conference</li> <li>• Seminar</li> <li>Exercises/Assignment (lab)</li> </ul>
4. Advanced Pathophysiology			1.5x40=60hrs	<ul style="list-style-type: none"> <li>• Case presentation</li> <li>• Seminar</li> </ul>

(60)				Clinical conference
5. Advanced Pharmacology (54)	10hrs		1x44=44hrs	<ul style="list-style-type: none"> <li>Nursing rounds</li> <li>Drug study presentation</li> </ul> Standing orders / presentation
6. Advanced Health Assessment (70+48)	8hrs		2x26=52hrs 1.5x18=27hrs 1x15=15hrs 2x6=12hrs 2x2=4hrs	<ul style="list-style-type: none"> <li>Clinical demonstration (faculty)</li> <li>Return demonstration</li> <li>Nursing rounds</li> <li>Physical assessment (all systems)</li> <li>Case study</li> </ul>
<b>TOTAL</b>	<b>48hrs</b>	<b>48hrs</b>	<b>336hrs</b>	

I year – Introductory classes= 1 week (48hrs), Workshop = 1 week(48hrs) ,44 weeks= 7.5 hrs/week (330/336hrs)

<b>II year courses 1wk Block classes (48hrs)</b>	<b>Theory integrated into clinical practicum</b>	<b>Methods of teaching</b>
1. Foundations of Transplant Nursing (96+48hrs) =144hrs	9hrs x11wks=99hrs	<ul style="list-style-type: none"> <li>Demonstration (lab)</li> <li>Return demonstration (lab)</li> <li>Clinical teaching</li> <li>Case study</li> <li>Seminar</li> <li>Clinical conference</li> <li>Faculty lecture</li> </ul>
2. Transplant Nursing I (96+48hrs) =144hrs	9x16=144hrs -----	<ul style="list-style-type: none"> <li>Demonstration (lab)</li> <li>Return Demonstration (lab)</li> <li>Clinical conference / journal club</li> <li>Seminar</li> <li>Case presentation</li> <li>Drug study(including drug interaction)</li> <li>Nursing rounds</li> <li>Faculty lecture</li> </ul>
3. Transplant Nursing II (96+48hrs) =144hrs	9x16=144hrs	<ul style="list-style-type: none"> <li>Demonstration (lab)</li> <li>Return Demonstration</li> <li>Nursing rounds</li> <li>Clinical conference / journal club</li> <li>Seminar</li> <li>Faculty lecture</li> </ul>

II year: Block classes-1wk, 45 wks – 8.5/9hrs/wk

Attendance: 100% in theory, practical and clinical.

**Topic for every teaching method will be specified in the detailed plan by the respective teacher/ institution concerned**

## CORE COURSES

### I. Theoretical Basis for Advanced Practice Nursing

#### COMPETENCIES

1. Analyses the global healthcare trends and challenges
2. Analyses the impact of Healthcare and Education policies in India on nursing consulting the documents available.
3. Develops in depth understanding of the healthcare delivery system in India, and its challenges
4. Applies economic principles relevant to delivery of healthcare services in transplant nursing
5. Manages and transforms health information to effect health outcomes such as cost, quality and satisfaction
6. Accepts the accountability and responsibility in practicing the Nurse practitioner's roles and competencies
7. Actively participates in collaborative practice involving all healthcare team members in transplant care and performs the prescriptive roles within the authorized scope
8. Engages in ethical practice having a sound knowledge of law, ethics, and regulation of advanced nursing practice
9. Uses the training opportunities provided through well planned preceptorship and performs safe and competent care applying nursing process/care pathways or clinical pathways
10. Applies the knowledge of nursing theories in providing competent care to donors and the recipients
11. Predicts future challenges of nurse practitioner's roles in variety of healthcare settings particularly in India

**Hours of instruction: 40hrs.**

SN	Topic	Hours
1	Global Health Care Challenges and Trends (Competency-1)	2
2	Health System in India Health Care Delivery System in India – Changing Scenario (Competency-3)	2
3	National Health Planning – 5 year plans and National Health Policy (Competency-2)	2
4	Health Economics & Health Care financing (Competency-4)	4
5	Health Information system including Nursing Informatics (use of computers) (Competency-5)	4
<b>Advanced Nursing Practice (ANP)</b>		
6	ANP-Definition, Scope, Philosophy, Accountability, Roles & Responsibilities (Collaborative practice and Nurse Prescribing roles) (Competency-6&7)	3
7	Regulation (accreditation of training institutions and Credentialing) & Ethical Dimensions of advanced nursing practice role (Competency-8)	3
8	Nurse Practitioner – Roles, Types, Competencies, Clinical settings for practice, cultural competence (Competency-6)	3
9	Training for NPs – Preceptorship (Competency-9)	2
10	Future challenges of NP practice (Competency-11)	4
11	Theories of Nursing applied to APN (Competency-10)	3
12	Nursing process / care pathway applied to APN (Competency-9)	2
	<b>Self-Learning assignments</b>	6
1	Identify Health Care and Education Policies and analyze its impact on Nursing	

2	Describe the legal position in India for NP practice. What is the future of nurse prescribing policies in India with relevance to these policies in other countries?	
3	Examine the nursing protocols relevant to NP practice found in transplant care units	
<b>Total</b>		<b>40</b>

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**II. Research Application and Evidence Based Practice in Transplant Nursing**

**COMPETENCIES**

1. Applies sound research knowledge and skills in conducting independent research in Transplant Nursing
2. Participates in collaborative research to improve patient care quality
3. Interprets and uses research findings in advanced practice to produce EBP
4. Tests / Evaluates current practice to develop best practices and health outcomes and quality care in advanced practice
5. Analyzes the evidence for nursing interventions carried out in Transplant Nursing practice to promote safety and effectiveness of care
6. Develops skill in writing scientific research reports

**Hours of Instruction (Theory: 56+Lab/skill lab: 24hrs) = 80 hrs**

SN	Topic	Hours
1	Research and Advanced Practice Nursing : Significance of Research and inquiry related to Advanced nursing role (Competency 1)	2
2	Research agenda for APN practice :Testing current practice to develop best practice, health outcomes and indicators of quality care in advanced practice, (Competency 3,4,5) promoting research culture	5
3	Research Knowledge and skills: Research competencies essential for APNs (interpretation and use of research, evaluation of practice, participation in collaborative research) Introduction to Evidence based practice (EBP) project- PICOT question, steps of planning, implementation, evaluation and dissemination (project proposal and project report) Research Methodology Phases / steps	40  (5 days workshop)

	(Research question, Review of literature, conceptual framework, research designs, sampling, data collection, methods & tools, Analysis and Reporting) writing research proposal and research report (Competency – 1 & 2)	
4	Writing for publication (writing workshop – Manuscript preparation, writing, publishing, peer reviewing and finding funding sources. (Competency – 6)	5 (workshop)
5	Evidence based practice (Competency-3,4,5) - Concepts, principles, importance and steps - Integrating EBP to transplant Nursing - Areas of evidence in transplant care - Barriers to implement EBP - Strategies to promote EBP	4
<b>Total</b>		<b>56</b>

#### Practical / Lab & Assignments- 24hrs

- Identifying research priorities
- Writing exercises on Research question, objectives, and hypothesis
- Writing research proposal/EBP project proposal
- Scientific paper writing – preparation of manuscript for publication
- Writing systematic review – Analyze the evidence for a given nursing intervention in Transplant Unit

#### Practicum

- Research practicum: Dissertation (336 hrs = 7 weeks)/ Evidence Based Practice Project (EBP project)

#### Bibliography:

- Gray, J., & Grove, S. K. (2020). *Burns & Groves The Practice of Nursing Research: Appraisal, Synthesis and Generation of Evidence* (9th ed.). St. Louis; Elsevier Saunders
- Polit, D. F., & Beck C.T. (2021). *Nursing research: Generating and assessing evidence for nursing practice*. 11th ed. New Delhi; Wolters Kluwer.
- Schmidt, N. A., & Brown, J. M. (2021). *Evidence – based practice for nurses appraisal and application of research*. Sd: Jones and Bartlet Publishers.

### III. Advanced skills in Leadership, Management and Teaching

#### COMPETENCIES

1. Applies principles of leadership and management in Transplant unit
2. Manages stress and conflicts effectively in Transplant units using sound knowledge of principles
3. Applies problem solving and decision-making skills effectively
4. Uses critical thinking and communication skills in providing leadership and managing patient care in Transplant units
5. Builds teams and motivates others in Transplant care units
6. Develops unit budget, manages supplies and staffing effectively
7. Participates appropriately in times of innovation and change
8. Uses effective teaching methods, media and evaluation based on sound principles of teaching
9. Develops advocacy role in patient care, maintaining quality and ethics in Transplant units
10. Provides counseling to families and patients

**Hours of Instruction – (56+24=80 Hrs)**

SN	Topic	Hours
1	Theories, styles of leadership and current trend	2
2	Theories, styles of management and current trends	2
3	Principles of leadership and management applied to transplant care settings	4
4	Stress management and conflict management – principles and application to transplant care environment, Effective time management	4
5	Quality improvement and audit	4
6	Problem solving, critical thinking and decision making, communication skills applied to transplant care nursing practice	5
7	Team building, motivating and mentoring within transplant unit	2
8	Budgeting and management of resources including human resources – transplant budget, material management, staffing, assignments	5
9	Change and innovation	2
10	Staff performance, and evaluation (performance appraisals)	6
11	Teaching – Learning theories and principles applied to Transplant Nursing	2
12	Competency based education and outcome-based education	2
13	Teaching methods / strategies, media: educating patients and staff in Transplant settings	8
14	Staff education and use of tools in evaluation	4
15	APN – Roles as a teacher	2
16	Advocacy roles in transplant care environment	2
<b>Total</b>		<b>56</b>

**Practical / Lab = 24 hrs.**

- Preparation of staff patient assignment
- Preparation of unit budget
- Preparation of staff duty roster
- Patient care audit
- Preparation of nursing care standards and protocols
- Management of equipment and supplies
- Monitoring, evaluation, and writing report of infection control practices
- Development of teaching plan for staff and student
- Micro teaching sessions
- Preparation of teaching method and media for patients and staff
- Planning and conducting OSCE/OSPE
- Construction of tools for staff appraisal
- Stress management counselling
- Preparation of Inventory

Assignment: Prepare Nursing care standards for one of the transplant unit

**Bibliography:**

Bastable, S. B. (2019). *Nurse as educator: Principles of teaching and learning for nursing practice* (5<sup>th</sup> ed.). New Delhi: Jones & Bartlett Publishers

Billings, D. M., & Halstead, J. A. (2019). *Teaching in nursing: A guide for faculty* (6<sup>th</sup> ed.). St.Louis, Missouri: Saunders Elsevier.

Clark, C. C. (2010). *Creative nursing leadership and management*. New Delhi: Jones and Bartlet Publishers.

Liebler, J.G & McConnel, C.R. (2008). *Management principles for health professionals*. Sudbury, M. A: Jones and Bartlet Publishers.

Roussel, L., &Swansburg, R. C. (2010). *Management and leadership for nurse administrators* (5th ed.). New Delhi: Jones and Bartlet Publishers

**ADVANCED NURSING COURSES**

**IV. A. Advanced Pathophysiology applied to Transplant Nursing**

**COMPETENCIES**

1. Integrates the knowledge of pathophysiological process in transplant care in developing diagnosis and plan of care
2. Applies the pathophysiological principles in symptom management and secondary prevention of complications
3. Analyzes the pathophysiological changes relevant to each condition requiring organ transplant recognizing the value of diagnosis, treatment, care and prognosis

**Hours of Instruction: 60 hours**

Unit	Hours	Content
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I	(14)	<p><b>Cardiovascular function</b> Advanced pathophysiological process of cardiovascular conditions requiring cardiac transplantation</p> <ul style="list-style-type: none"> <li>• Congenital heart failure</li> <li>• Coronary artery diseases</li> <li>• End stage heart failure</li> <li>• Decompensated valvular heart disease</li> <li>• Cardiomyopathy</li> <li>• Refractory angina</li> <li>• Non obstructive hypertrophic heart disease</li> <li>• Refractory cardiogenic shock</li> <li>• Valvular heart disease</li> <li>• Progressive pulmonary hypertension</li> <li>• Life threatening / Malignant arrhythmias</li> </ul>
II	(10)	<p><b>Pulmonary function</b> Advanced pathophysiological process of pulmonary conditions requiring Lung transplantation</p> <ul style="list-style-type: none"> <li>• Interstitial lung disease</li> <li>• Chronic obstructive pulmonary disease (COPD)</li> <li>• Pulmonary arterial hypertension</li> <li>• Bronchiolitis Obliterans</li> <li>• Cystic and pulmonary fibrosis</li> <li>• Restrictive lung disease</li> <li>• Emphysema due to alpha-1 antitrypsin deficiency</li> <li>• Respiratory failure</li> <li>• Tumors</li> <li>• Sarcoidosis</li> <li>• Bronchiectasis</li> <li>• COVID-19</li> </ul>
III	(6)	<p><b>Renal function</b> Advanced pathophysiological process of renal conditions requiring renal transplantation</p> <ul style="list-style-type: none"> <li>• Diabetic nephropathy</li> <li>• Vascular disorders</li> <li>• Polycystic kidney disease</li> <li>• Metabolic errors</li> <li>• Autoimmune diseases</li> <li>• Obstructive Uropathy</li> <li>• End Stage Renal Disease</li> <li>• Renal tumor</li> <li>• Amyloidosis</li> <li>• Infections- Pyelonephritis, Glomerulonephritis</li> </ul>
IV	(14)	<p><b>Intestinal, Pancreas and liver function</b> Advanced pathophysiological process of gastrointestinal and hepatobiliary conditions requiring transplantation</p> <p><i>Intestine</i></p> <ul style="list-style-type: none"> <li>• Congenital malformation – small bowel atresia, aganglionosis</li> <li>• Short bowel syndrome</li> <li>• Functional disorder – impaired motility</li> <li>• IBD – crohn’s disease</li> <li>• Intestinal failure</li> </ul>

V	(10)	<p><b>Pancreas</b></p> <ul style="list-style-type: none"> <li>• Uncontrolled type I diabetes</li> </ul> <p><b>Liver</b></p> <ul style="list-style-type: none"> <li>• End-stage liver diseases – alcoholic liver disease, hepatitis, Cholestatic liver disease (PBC, PSC), Non-alcoholic steatohepatitis (NASH)</li> <li>• Metabolic diseases - Alpha 1 antitrypsin disease, Hemochromatosis, Amyloidosis, Oxaluria</li> <li>• Autoimmune diseases</li> <li>• Budd-Chiari syndrome</li> <li>• Pulmonary disease (Porto pulmonary hypertension/hepatopulmonary syndrome)</li> <li>• Neoplasia - Hepatocellular carcinoma</li> <li>• Acute fulminant hepatic failure</li> <li>• Chronic viral hepatitis</li> </ul> <p><b>Hematological function</b></p> <p>Advanced pathophysiological process of hematological conditions requiring transplantation</p> <ul style="list-style-type: none"> <li>• Leukaemia</li> <li>• Hodgkin’s and non-Hodgkin’s lymphoma</li> <li>• Multiple myeloma</li> <li>• Genetic disorders</li> <li>• Autoimmune disorders</li> <li>• Bone marrow failure syndrome - aplastic anaemia</li> <li>• Tumour</li> </ul>
VII	(3)	<p>Advanced pathophysiological process of eye requiring transplantation</p> <ul style="list-style-type: none"> <li>• Corneal diseases - degeneration, perforation, dystrophy</li> <li>• Keratoconus</li> <li>• Bullous keratopathy</li> <li>• Keratitis</li> </ul>
VIII	(3)	<ul style="list-style-type: none"> <li>• Advanced pathophysiological process of <b>Human Immune System</b> Rejection Infection</li> </ul>
	<b>60</b>	

### Bibliography

1. Berkowitz, A. (2021). Clinical Pathophysiology. (Ed.2). MedMaster. Inc
2. Huether, S. E., McCance, K. L. & Brashers, V.L. (2019). Understanding pathophysiology (Ed.7). St. Louis, Missouri: Elsevier
3. Norris, T.L. (2020) Porth’s Essentials of Pathophysiology. (Ed.5) Walters & Kluwer

4. Porth, C. M. (2007). Essentials of pathophysiology: Concepts of altered health states (Ed.4). Philadelphia: Lippincott Williams and Wilkins.
5. Story, L. & Dlugasch, L. (2019). Advanced Pathophysiology for The Advanced Practice Nurse. (Ed.1) Jones & Bartlett Publishers, Inc.
6. Willis, L. M. (2019). Professional Guide to Pathophysiology. (Ed. 4). LWW

IV. B. V. Advanced Pharmacology relevant to Transplant Nursing

COMPETENCIES

1. Applies the pharmacological principles in providing care to both donors and recipients in transplant care
2. Analyzes pharmaco-therapeutics and pharmacodynamics relevant to drugs used in the transplant care
3. Performs safe drug administration based on principles and institutional protocols
4. Documents accurately and provides follow up care
5. Applies sound knowledge of drug interactions in administration of drugs to patients in transplant care and guiding their families in self-care management

Hours of Instruction Theory: 54 hours

Unit	Hours	Content
I	2	Introduction to pharmacology <ul style="list-style-type: none"> <li>• History</li> <li>• Classification of drugs and schedules</li> </ul>
II	3	Pharmacokinetics and Pharmaco-dynamics <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Absorption, Distribution, Metabolism, Distribution and Excretion of drug</li> <li>• Plasma concentration, half life</li> <li>• Loading and maintenance dose</li> <li>• Therapeutic index and drug safety</li> <li>• Potency and efficacy</li> <li>• Principles of drug administration               <ul style="list-style-type: none"> <li>- The rights of drug administration</li> <li>- Systems of measurement</li> <li>- Enteral drug administration</li> <li>- Topical drug administration</li> <li>- Parenteral drug administration</li> </ul> </li> </ul>
III	(6)	<b>Pharmacology and Cardiovascular alterations in Transplant care</b> <ul style="list-style-type: none"> <li>• Pharmacological therapies used in Pretransplant cardiovascular diseases – dose, interactions, side-effects, monitoring, and contra indications</li> </ul>
IV	(6)	<b>Pharmacology and Pulmonary alterations in Transplant care</b> <ul style="list-style-type: none"> <li>• Pharmacological therapies used in Pretransplant pulmonary diseases – dose, interactions, side effects, monitoring and contra indications</li> </ul>
V	(6)	<b>Pharmacology and Renal alterations in Transplant care</b> <ul style="list-style-type: none"> <li>• Pharmacological therapies used in Pretransplant renal diseases – dose, interactions, side effects, monitoring, and contra indications</li> <li>• Pharmacological therapies used in kidney disease - antihypertensive drugs, nephrotoxic drugs, phosphorous binders, erythropoietin therapy</li> </ul>

VI	(8)	<b>Pharmacology and intestinal, pancreas and liver alterations in Transplant care</b> <ul style="list-style-type: none"> <li>Pharmacological therapies used in Pretransplant intestinal, pancreas and liver diseases – dose, interactions, side-effects, monitoring and contra indications</li> </ul>
VII	(8)	<b>Pharmacology and Hematological alterations in Transplant care</b> <ul style="list-style-type: none"> <li>Pharmacological therapies used in Pretransplant hematological diseases – dose, interactions, side-effects, monitoring and contra indications</li> </ul>
IV	(15)	<b>Pharmacological therapies in Post-transplant care</b> <ul style="list-style-type: none"> <li>Pharmacological therapies used in transplant care – indications, dose, drug interactions, side effects, monitoring, drug assays and contra indications, cost and financial implications</li> <li>Supplements</li> <li>Analgesia</li> <li>Use of anti-coagulant, anti-microbials, anti-fungals and anti-virals in managing the patient with complex co-morbidities.</li> <li>Immunosuppressants - types, indication, contraindication, classification, mechanism of action and dosing guidelines and monitoring of drugs used in transplantation</li> <li>Immunoglobulin</li> </ul>
<b>Total</b>	54	

## Bibliography

Eisen, H.J (2020). Pharmacology of Immunosuppression. (Ed.1). Springer

McKay, G.A & Walters, M. R. (2021). Clinical Pharmacology and Therapeutics. (Ed.10). Wiley-Blackwell

Wynne, A. L., Woo, T. M., & Olyaei, A. J. (2007). *Pharmacotherapeutics for nurse practitioner prescribers* (2nded.). Philadelphia: Davis.

## IV. C. Advanced Health Assessment

### COMPETENCIES

- Applies the physical assessment principles in developing appropriate system wise examination skills
- Uses advanced health assessment skills to differentiate between variations of normal and abnormal findings
- Orders screening and diagnostic tests based on the examination findings and institutional protocols
- Analyzes the physical examination findings and results of various investigations and works collaboratively with emergency physicians for development of diagnoses
- Documents assessment, diagnosis, and management and monitors follow up care in partnership with health care team members, patients, and families

Hours of instruction Theory: 70 hours

Practical/Lab: 48 hours

Unit	Hours	Content
I	4	<ul style="list-style-type: none"> <li>Introduction</li> <li>History Taking</li> <li>Physical Examination</li> </ul>

II	7	<b>Cardiovascular system</b> <ul style="list-style-type: none"> <li>• Cardiac history</li> <li>• Physical examination</li> <li>• Cardiac laboratory studies – biochemical markers, hematological studies</li> <li>• Cardiac diagnostic studies – Electrocardiogram, echocardiography, stress testing, radiological imaging</li> </ul>
III	7	<b>Respiratory Function</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Respiratory monitoring – Arterial blood gases, pulse oximetry, end-tidal carbon dioxide monitoring</li> <li>• Respiratory Diagnostic tests – Chest radiography, ventilation perfusion scanning, pulmonary angiography, bronchoscopy, thoracentesis, sputum culture, pulmonary function test</li> </ul>
IV	7	<b>Nervous system</b> <ul style="list-style-type: none"> <li>• Neurological history</li> <li>• General physical examination</li> <li>• Assessment of cognitive function</li> <li>• Assessment of cranial nerve function</li> <li>• Motor assessment – muscle strength, power, and reflexes</li> <li>• Sensory assessment – dermatome assessment</li> <li>• Neurodiagnostic studies – CT scan, MRI, PET</li> </ul>
V	6	<b>Renal System</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Assessment of renal function</li> <li>• Assessment of electrolytes and acid base balance</li> <li>• Assessment of fluid balance</li> <li>• Renal diagnostic studies – Renal Biopsy, Renal Doppler, Renal Angiogram, Ultrasonography</li> </ul>
VI	5	<b>Gastrointestinal system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Nutritional assessment</li> <li>• Laboratory studies – Liver function studies, blood parameters, stool test</li> <li>• Diagnostic studies – radiological and imaging studies, endoscopic studies, biopsy</li> </ul>
VII	4	<b>Endocrine system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Laboratory studies</li> <li>• Diagnostic studies of Islets of Langerhans</li> </ul>
VIII	4	<b>Hematological system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Laboratory studies - blood parameters</li> <li>• Diagnostic studies – bone marrow aspiration</li> </ul>

IX	3	<b>Integumentary system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Pathological examination – tissue examination</li> </ul>
X	6	<b>Musculoskeletal system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Laboratory studies</li> <li>• Diagnostic studies</li> </ul>
XI	5	<b>Reproductive system</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical examination</li> <li>• Laboratory studies</li> <li>• Diagnostic studies</li> </ul>
XIII	6	<b>Assessment of children</b> <ul style="list-style-type: none"> <li>• Growth and development</li> <li>• Nutritional assessment</li> <li>• Specific system assessment</li> </ul>
XIV	6	<b>Assessment of older adults</b> <ul style="list-style-type: none"> <li>• History</li> <li>• Physical assessment</li> <li>• Psychological assessment</li> <li>• Specific system assessment</li> </ul>
	<b>70</b>	

**List of skills to be practiced in the skill lab (48 hours include demonstration by the faculty and practice by the students)**

- Comprehensive history taking
- Focused history taking (system wise )
- Comprehensive physical examination
- Focused physical examination (system wise)
- Monitoring clinical parameters (system wise)
- Invasive BP monitoring, Multi-parameter Monitors, ECG, Pulse index Continuous Cardiac Output (PiCCO), Peripheral vascular status, ABG, Pulse Oximetry, End Tidal CO2 (ETCO2), Intracranial Pressure (ICP), Glasgow Coma Scale (GCS), Cranial nerve assessment, Pain and Sedation score, Motor assessment, Sensory assessment, Renal function tests, Fluid balance, acid base balance, electrolytes, Bowel sounds, Abdominal pressure, Liver function tests, GRBS, Lab tests, Radiological and Imaging tests(system wise)
- Ordering and interpretation of screening and diagnostic tests (Enclosed-Appendix 5)
- Assessment of children & adults

**Bibliography**

- Bickley, L. S., & Szilagy, P. G. (2018). Bates’ guide to physical examination and history taking. South Asian edition. Wolters Kluwer India Pvt. Ltd.
- Rhoads, J. (2013). *Advanced health assessment and diagnostic reasoning*. (Ed.2). Philadelphia: Lippincott Williams & Wilkins.
- Wilson, S. F., & Giddens, J. F. (2021). *Health assessment for nursing practice* (Ed. 7). Elsevier - Health Sciences Division.

## SECOND YEAR

### Transplant specialty courses

(Foundations of Transplant Nursing Practice, Transplant Nursing I and Transplant Nursing II)

#### COMPETENCIES

1. Appreciates trends and issues related to transplant care.
2. Applies advanced concepts of Transplant nursing based on sound knowledge of these concepts
3. Performs physical, psychosocial, and spiritual assessment of the donors and recipients of transplant care
4. Assists in various diagnostic, therapeutic and surgical procedures related to donor and recipient care
5. Demonstrates advance skills/competence in managing donors and for the recipients before and after transplant surgeries.
6. Works in collaboration with other healthcare team members and prepares care/clinical pathways in assessment and management of patients requiring transplant care
7. Identifies emergencies and complications related to transplantation and take appropriate measures
8. Participates in national health programs to promote organ donation and health promotion, prevention and rehabilitation of patients undergoing transplant surgeries.
9. Applies ethically sound solutions to complex issues related to transplant care
10. Practices principles of infection control relevant to transplant care
11. Practices independently within the legal framework of the country in transplant care towards the interest of patients, families, and communities
12. Uses applicable communication, counseling, advocacy, and interpersonal skills to initiate, develop and discontinue therapeutic relationships
13. Creates and maintains a safe therapeutic environment using risk management strategies and quality improvement
14. Supports patients and their families to cope with emotional and spiritual distress, grief and anxiety applying counselling skills
15. Incorporates principles of end-of-life care in interacting with family members, whenever applicable.
16. Assists patients and their family to cope with emotional distress, grief, and anxiety
17. Coordinates patient care activities recognizing the value of teamwork and be sensitive to the growing stress and burn out among health care professionals
18. Applies / suggests innovations incorporating evidence-based nursing practice and identify the areas of research in the field of transplant nursing
19. Familiarizes with the legal formalities and documentation processes associated with transplantation
20. Designs a layout of Transplant Unit and develop Standard Operating Protocols for Transplantation care
21. Performs the role of NP in transplant Nursing/ transplant nurse coordinator /specialist as a member of the medical surgical health team

#### **VII. Foundations of Transplant Nursing Practice**

Hours of instruction: Theory: 96 hours, Practical/skill lab: 48 hours

Unit	Hours	Content
I	10	<b>Introduction to Transplant Nursing</b> <ul style="list-style-type: none"><li>• Introduction to the course</li><li>• Historical development of organ transplantation: type, trends and issues, transplant modalities</li><li>• Terminologies</li><li>• Definition and scope of Transplant Nursing</li></ul>

		<ul style="list-style-type: none"> <li>• Concept, principles, and nursing perspectives of Transplant Nursing</li> <li>• Transplant care unit set up including equipment and supplies</li> <li>• Transplant team roles and function</li> <li>• Role of nurse in the organ transplant</li> <li>• Current and future challenges and innovations in transplant care</li> </ul>
II	15	<p><b>Concept of Holistic care applied to Transplant Nursing practice</b></p> <ul style="list-style-type: none"> <li>• Application of nursing process and integrated care/clinical pathways in caring for patients requiring transplant care</li> <li>• Admission and monitoring of patients in transplant care unit</li> <li>• Overview of transplant care <ul style="list-style-type: none"> <li>▪ Airway Management</li> <li>▪ Optimal circulation and tissue oxygenation</li> <li>▪ Hemodynamic monitoring</li> <li>▪ Temperature maintenance</li> <li>▪ Pain management</li> <li>▪ Fluid and electrolyte balance</li> <li>▪ Organ protection</li> <li>▪ Infection control</li> </ul> </li> <li>• Cardio-pulmonary-brain resuscitation <ul style="list-style-type: none"> <li>➢ BLS</li> <li>➢ ACLS</li> <li>➢ PALS</li> </ul> </li> <li>• Oxygenation and oximetry, care of patient with oxygen delivery devices</li> <li>• Ventilation and ventilator support (including humidification and inhaled drug therapy), care of patient with invasive and noninvasive ventilation</li> <li>• Restraints in transplant care – physical, chemical and alternatives to restraints</li> <li>• Death in transplant care unit: End of life care/Care of dying, and care of family</li> <li>• Stress and burnout syndrome among health team members</li> </ul>
III	10	<p><b>Appraisal of the patients undergoing transplant surgeries</b>  <i>Assessment of the critically ill pre / post-transplant patients</i></p> <ul style="list-style-type: none"> <li>• Cardiac assessment</li> <li>• Respiratory assessment</li> <li>• Renal assessment</li> <li>• Neurological assessment</li> <li>• Gastrointestinal assessment</li> </ul> <p><i>Monitoring of the critically ill pre / post-transplant patients</i></p> <ul style="list-style-type: none"> <li>• Arterial blood gas (ABG)</li> <li>• Capnography</li> <li>• Hemodynamics</li> <li>• Electrocardiography (ECG)</li> <li>• Transesophageal echocardiogram</li> <li>• Glasgow Coma Scale (GCS)</li> <li>• Richmond agitation sedation scale (RASS)</li> <li>• Pain score</li> <li>• Braden score</li> </ul>
V	6	<p><b>Pain assessment and Management</b></p> <ul style="list-style-type: none"> <li>• Pain management after transplant surgery</li> <li>• Pain – Types, Theories</li> <li>• Physiology, Systemic responses to pain and psychology of pain Review</li> <li>• Acute pain services</li> <li>• Pain assessment – Pain scales, behavior, and verbalization</li> <li>• Pain management-pharmacological</li> </ul>



		<ul style="list-style-type: none"> <li>• Nonpharmacological management</li> <li>• Transcutaneous electrical nerve stimulation (TENS)</li> </ul>
VI	8	<b>Psychosocial and spiritual alterations: Assessment and management</b> <ul style="list-style-type: none"> <li>• Stress and psychoneuroimmunology</li> <li>• Post-traumatic stress reaction</li> <li>• Acute Psychosis, Anxiety, Agitation, Delirium</li> <li>• Spiritual challenges in transplant care</li> <li>• Coping with stress and illness</li> <li>• Issues in Transplant Science - Socio cultural, ethical, psychological, and financial/economic issues</li> </ul>
VII	4	<b>Patient and family education and counseling</b> <ul style="list-style-type: none"> <li>• Informational needs of recipient and families in transplant care</li> <li>• Challenges of patient and family education</li> <li>• Counseling needs of patient and family and the challenges</li> <li>• Crisis and grief counseling, and communication</li> </ul>
VIII	6	<b>Fluid, electrolyte, and acid base alterations</b> <ul style="list-style-type: none"> <li>• Review of Fluid, electrolyte, and acid base balance</li> <li>• Assessment and management of Fluid, electrolyte, and acid base imbalances</li> </ul>
IX	4	<b>Thermoregulation and management</b> <ul style="list-style-type: none"> <li>• Review on thermoregulation</li> <li>• Hyperthermia</li> <li>• Hypothermia</li> <li>• Management of patients with thermoregulatory issues</li> </ul>
X	6	<b>Infection control in transplant unit</b> <ul style="list-style-type: none"> <li>• Nosocomial infection</li> <li>• Disinfection, Sterilization</li> <li>• Standard safety measures</li> <li>• Reverse barrier Nursing</li> <li>• Staff prophylaxis</li> <li>• Antimicrobial therapy- review</li> <li>• Infection control policies and protocols</li> <li>• Pre and Post-transplant - common symptoms of infection and management guidelines</li> <li>• Recipient infection prevention - vaccinations, medications, and identification of strategies for safe living</li> </ul>
XI	12	<b>Legal and ethical issues in transplant care-Nurse's role</b> <b>Legal aspects</b> <ul style="list-style-type: none"> <li>• Legislations and regulations related to transplant care - Transplantation of Human Organs and Tissues Act (THOTA)</li> <li>• Legal responsibilities of nurses</li> <li>• National guideline for organ transplant</li> <li>• National and State organ transplant program and registry</li> <li>• National Organ and Tissue Transplant Organization (NOTTO)</li> <li>• Regional Organ and Tissue Transplant Organization (ROTTO)</li> <li>• State Organ and Tissue Transplant Organization (SOTTO)</li> <li>• Brain Stem Death Declaration in India and its procedure</li> <li>• Presumed consent</li> <li>• Policies and protocol related to organ donation</li> <li>• Documentation related to organ donation</li> </ul> <b>Ethical Issues</b> <ul style="list-style-type: none"> <li>• Introduction</li> </ul>

		<ul style="list-style-type: none"> <li>• Code of Ethics, code of professional conduct and practice standards of Nursing in India</li> <li>• Ethical aspects of organ donation and transplantation</li> <li>• Ethical decision making in transplant care - withholding treatment, managing Scarce resource in transplant care</li> <li>• Strategies for promoting ethical decision making</li> <li>• Do Not Resuscitate (DNR), Euthanasia, Living will</li> </ul>
XII	8	<b>Quality assurance</b> <ul style="list-style-type: none"> <li>• Philosophy, aims and objectives of transplant units</li> <li>• Design of transplant care units</li> <li>• Quality assurance models applicable to transplant care units</li> <li>• Standards, Protocols, Policies, Procedures</li> <li>• Infection control policies and protocols</li> <li>• Standard safety measures</li> <li>• Nursing audit relevant to transplant care</li> <li>• Staffing</li> </ul>
XIII	3	<b>Evidence based practice in Transplant nursing</b> <ul style="list-style-type: none"> <li>• Evidence based practice in transplant care</li> <li>• Barriers to implementation</li> <li>• Strategies to promote implementation</li> </ul>
	4	<b>Class tests</b>
Total	96	

***List of skills to be practiced in the skill lab (46 hours include demonstration by the faculty and practice by the students)***

- CPR (BLS and ACLS)
- Airway Management
  - Suctioning – open/closed
  - Oropharyngeal airway
  - Nasopharyngeal airway
  - Laryngeal mask airway
  - Definitive airway management
    - Endo tracheal intubation
  - Surgical airway management
    - Cricothyroidotomy
    - Tracheostomy
- Oxygenation and oximetry, care of patient with oxygen delivery devices
  - Devices to measure oxygen/oxygenation
    - ✓ Oximetry – Pulse oximetry, Venous oximetry
    - ✓ PF (PaO<sub>2</sub>/FiO<sub>2</sub>) ratio
  - Capnography
  - Noninvasive ventilation
    - ✓ Low flow variable performance devices: nasal catheter/cannula/double nasal prongs, face mask, face mask with reservoir bags
    - ✓ High flow fixed performance devices : Entrainment (Venturi) devices, NIV, T pieces, breathing circuits
- Ventilation and ventilator support
  - Setting up of ventilators
  - Connecting to ventilator
  - Weaning from ventilator
  - Extubation
  - Humidifiers
  - Nebulizers – jet, ultrasonic

- Inhalation therapy – metered dose inhalers (MDI), dry powder inhalers (DPI)
- Circulation and perfusion (including hemodynamic evaluation and waveform graphics)
  - Non-invasive BP monitoring
  - Invasive blood pressure monitoring
  - Venous pressure (Peripheral, Central and Pulmonary artery occlusion pressure)
  - Insertion and removal of arterial line
  - Insertion and removal of central line
  - Pulse index Continuous Cardiac output (PiCCO)
  - Electrocardiography (ECG)
  - Waveforms
- Fluids and electrolytes
  - Fluid calculation and administration
  - Administration of blood and blood products
  - Inotrope calculation, titration, and administration
  - Electrolyte correction ( Sodium, potassium, calcium, phosphorus, magnesium)
  - Use of fluid dispenser, syringe pump and infusion pumps
- Evaluation of acid base status
  - Arterial blood gas (ABG)
  - Correction of acidosis and alkalosis
- Thermoregulation, care of patient with hyper/hypothermia
  - Temperature probes
  - Management of hyper and hypothermia
- Glycemic control, care of patient with glycemic imbalances
  - Monitoring GRBS
  - Insulin therapy (sliding scale and infusion)
  - Management of Hyperglycemia
  - Management of hypoglycemia
- Pharmacological management of pain, sedation, agitation, and delirium
  - Calculation, loading and infusion
  - Epidural analgesia
- Creating public awareness on organ and tissue donation
- Counseling – individual and family
- Individual and family education

### Transplant Nursing I

Hours of Instruction: Theory: 96 hours, Practical: 48 hours

Unit	Hours	Content
I	6	<b>Organ transplant immunology</b> <ul style="list-style-type: none"> <li>● General concepts of human immune system &amp; transplant immunology</li> <li>● Immunologic risk assessment</li> <li>● Donor selection, Matching - HLA and Histocompatibility</li> <li>● Organ or graft rejection and types</li> <li>● Immunosuppression</li> <li>● Post-transplant antibody assay</li> </ul>
II	5	<b>Drugs used in transplant</b> <ul style="list-style-type: none"> <li>● Drugs and solutions used during harvesting, storage and transportation of organs</li> <li>● Supplements</li> <li>● Immunosuppressants and preparation and prevention of its toxicity and complications</li> <li>● Antibiotics</li> <li>● Blood and blood components</li> <li>● Prophylactic and adjuvant medications used in transplant</li> <li>● Nursing responsibility</li> </ul>

III	5	<p><b>Psycho-social issues in transplantation</b></p> <ul style="list-style-type: none"> <li>• Psychological impact of transplant in donor and recipient</li> <li>• Psycho social assessment of donor and recipient</li> <li>• Prevention: Multidisciplinary care</li> <li>• Role of nurse</li> <li>• Role of support groups</li> </ul>
IV	10	<p><b>Organ donation</b></p> <ul style="list-style-type: none"> <li>• Brain death evaluation and organ donation process</li> <li>• Organ donation pledge - advocacy</li> <li>• Types of donors – Donation after Cardiac Death (DCD), Donation after Brain Death (DBD), Live related Donor, Live unrelated donor (altruistic donor)</li> <li>• Eligibility criteria for transplant – Donor</li> <li>• Contra indications to organ donation</li> <li>• High risk donor and potential impact if organs used</li> <li>• Management of potential donor</li> <li>• Allocation of organs for both local and national offering</li> <li>• Types of grafts – split, marginal, domino</li> <li>• Cold ischemic time (CIT), warm ischemic time (WIT) and its impact on the donor organ survival</li> <li>• Donor and recipient factors involved in the calculation of the Transplant benefit score (TBS)</li> <li>• Organ allocation</li> <li>• Multi-Organ retrieval</li> <li>• Family approach for organ donation and family care</li> </ul>
V	5	<p>Care of the donor &amp; the organ</p> <ul style="list-style-type: none"> <li>• Donor assessment</li> <li>• Care of the donor</li> <li>• Organ procurement, preservation, storage, and transportation</li> <li>• Organ perfusion and tissue preservation</li> <li>• Family communication / counseling</li> <li>• Role of transplant coordinator/NP in Transplant Nursing– donor &amp; recipient</li> <li>• Waitlist Management</li> </ul>
VI	5	<p>Operative Room Management</p> <ul style="list-style-type: none"> <li>• Physical Preparation – physical set up, operation trolley preparation</li> <li>• OR team</li> <li>• Organ Perfusion - UW &amp; HTK solutions</li> <li>• Therapeutic environment in OT</li> <li>• Assisting with organ transplantation</li> <li>• Intra-operative management and monitoring of donor and recipient</li> </ul>
VII	15	<p><b>Heart and Valves Transplantation</b></p> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of cardiovascular system</li> <li>• Indication and contraindications for heart and valve transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• Pre transplant assessment - History, Physical Examination, Investigation and diagnostic procedures</li> <li>• Pre and posttransplant care of the recipient</li> <li>• Treatment modalities – CPR, ACLS, Defibrillation, Cardioversion, IABP</li> <li>• Transplant procedure and intraoperative care of the donor organ and the recipient</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management</li> </ul>

		<ul style="list-style-type: none"> <li>• Complications after heart transplant and management.</li> <li>• Nurse’s role in caring for patients undergoing heart transplantation</li> <li>• Drugs used after heart transplant.</li> <li>• Post-transplant cardiac rehabilitation and follow up</li> </ul>
VIII	15	<p><b>Lung Transplantation</b></p> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of lung</li> <li>• Indication and contraindications for lung transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• Pre transplant assessment - History, Physical Examination, Investigation, and diagnostic procedures</li> <li>• Pre and post-transplant care of the recipient</li> <li>• Treatment modalities – ECMO</li> <li>• Organ retrieval &amp; transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management.</li> <li>• Nurses’ role in lung transplantation</li> <li>• Drugs used in lung transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
IX	15	<p><b>Renal Transplantation</b></p> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of kidney</li> <li>• Donor &amp; Recipient assessment – History, Physical Examination, Investigation and diagnostic procedures</li> <li>• Indications and contraindication for renal transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• ABO incompatible transplant, Swap transplantation</li> <li>• Pre transplant care of the recipient</li> <li>• Treatment modalities – Hemodialysis, Peritoneal dialysis &amp; Therapeutic Plasma exchange</li> <li>• Fluid management protocol following transplant</li> <li>• Post operative care of donor and recipient</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management.</li> <li>• Nurse’s role in renal transplantation</li> <li>• Drugs used in renal transplantation – therapeutic drug monitoring</li> <li>• Rehabilitation and follow-up</li> </ul>
X	15	<p><b>Liver Transplantation</b></p> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of liver</li> <li>• Indication and contraindications for liver transplant</li> <li>• Eligibility criteria for liver transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Types of liver transplant-live donor/cadaveric donor</li> <li>• Selection of donor and matching</li> <li>• Pre transplant assessment - History, Physical Examination, Investigation and diagnostic procedures</li> <li>• Pre transplant care of the recipient</li> <li>• Organ retrieval and preservation</li> <li>• Monitoring and management of post-operative liver function of donor and recipient</li> </ul>

		<ul style="list-style-type: none"> <li>• Monitoring and management of renal function including Hemodialysis</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management</li> <li>• Nutrition management</li> <li>• Nurse's role in liver transplantation</li> <li>• Drugs used in liver transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
Total	96 hours	

List of skills to be practiced in the skill lab (48 hours include demonstration by the faculty and practice by the students)

- Organ donation
  - Evaluation of brain death
  - Counselling for organ donation
- Safe retrieval, Storage and transport of the organ
- Assisting with organ harvesting
- Assisting with transplant surgeries
- Setting up of Transplant OT including operation trolley
- Care of donor
- Care of recipient – pre and post-transplant

### Transplant Nursing - II

Hours of instruction: Theory: 96 hours, Practical: 48 hours

UNIT	NO. OF HRS	TOPIC
I.	8	<b>Transplant Complications: Infectious and Non- infectious Diseases – Prevention and treatment modalities</b> <ul style="list-style-type: none"> <li>• Donor-Transmitted infections</li> <li>• Post-transplant Infection</li> <li>• Noninfectious complications – Rejection</li> </ul>
II.	16	<b>Bone marrow Transplantation</b> <ul style="list-style-type: none"> <li>• Review of anatomy and Physiology of blood, bone marrow, spleen and lymphatics</li> <li>• Clinical assessment and diagnostic procedures of the hematological system</li> <li>• Indications and contraindications for bone marrow transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• Peripheral blood stem cell transplantation</li> <li>• Bone marrow stem cell transplantation</li> <li>• Autologous Vs Allogenic stem cell transplantation</li> <li>• Stem cell harvesting</li> <li>• Preparing a patient for transplantation – conditioning</li> <li>• Treatment modalities -Transfusion of blood and blood products</li> <li>• Genetic counselling and role of a nurse</li> <li>• Care of patient after bone marrow transplantation</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management</li> <li>• Nurse's role in caring for patients undergoing bone marrow transplantation</li> </ul>

		<ul style="list-style-type: none"> <li>• Drugs used in and after the bone marrow transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>III.</b>	<b>12</b>	<b>Pancreas Transplantation</b> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of the pancreas</li> <li>• Donor and recipient health assessment – History, Physical Examination, Investigation, and diagnostic procedures</li> <li>• Indications and contraindications for pancreatic transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• Pre and post-operative care of recipient</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management.</li> <li>• Nutrition and Management of blood glucose levels</li> <li>• Nursing management after pancreatic transplantation</li> <li>• Drugs used in pancreatic transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>IV.</b>	<b>12</b>	<b>Intestine Transplantation</b> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of GI system</li> <li>• Donor and recipient health assessment – History, Physical Examination, Investigation, and diagnostic procedures</li> <li>• Indications, and contraindications for intestinal transplant</li> <li>• Eligibility criteria for transplant recipient</li> <li>• Evaluation of transplant recipient</li> <li>• Selection of donor and matching</li> <li>• Pre-operative care of recipient</li> <li>• Post-operative care of donor and recipient</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential surgical complications, infections, or rejection and their management.</li> <li>• Nutritional considerations</li> <li>• Nurse’s role in intestinal transplantation</li> <li>• Drugs used in intestinal transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>V.</b>	<b>10</b>	<b>Eye Transplantation</b> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of the Eye</li> <li>• Health assessment – History, Physical Examination, Investigation and diagnostic procedures</li> <li>• Indications, and contraindications for eye/corneal transplant</li> <li>• Donor care and organ retrieval</li> <li>• Evaluation of transplant recipient</li> <li>• Pre and post operative care of the recipient</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential complications after transplant and their management.</li> <li>• Nurse’s role in transplantation</li> <li>• Drugs used in transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>VI.</b>	<b>8</b>	<b>Thymus and uterus Transplantation</b> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of thymus and uterus</li> </ul>

		<ul style="list-style-type: none"> <li>• Donor and recipient health assessment – History, Physical Examination, Investigation, and diagnostic procedures</li> <li>• Indications, and contraindications for thymus and uterus transplantation</li> <li>• Evaluation of transplant recipient</li> <li>• Primary immune deficiency &amp; thymus anomaly</li> <li>• Monitoring and evaluation for potential complications after transplant and their management.</li> <li>• Pre and post-operative care of donor and recipient</li> <li>• Nurse’s role in transplantation</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>VII.</b>	<b>10</b>	<b>Transplantation of the skin, muscle nerve, vein, bone, and tendon:</b> <b>Bone banking:</b> <ul style="list-style-type: none"> <li>• Review of anatomy and physiology of Neuro Musculo Skeletal System</li> <li>• Donor and recipient health assessment – History, Physical Examination, Investigation, and diagnostic procedures</li> <li>• Indications, and contraindications for nerve, vein, bone and tendon transplantation</li> <li>• Evaluation of transplant recipient</li> <li>• Skin malignancy, muscle and musculocutaneous flaps, brachial plexus injury, tendon &amp; nerve transfers / implants, bone graft</li> <li>• Pre and post-operative care of donor and recipient</li> <li>• Transplant procedure and intraoperative care</li> <li>• Monitoring and evaluation for potential complications after transplant and their management.</li> <li>• Nurse’s role in transplantation</li> <li>• Drugs used in transplantation and immunosuppression</li> <li>• Rehabilitation and follow-up</li> </ul>
<b>VIII.</b>	<b>10</b>	<b>Transplant in children</b> <ul style="list-style-type: none"> <li>• Donor</li> <li>• Receipt</li> </ul> Clinical concerns following organ transplantation in children
<b>IX.</b>	<b>10</b>	<b>Healthy Living Post-transplant</b> <ul style="list-style-type: none"> <li>• Discharge Preparation of donor and recipient</li> <li>• Rehabilitation &amp; follow up</li> <li>• Healthy lifestyle including nutrition, rest, exercise</li> <li>• Psychosocial aspects in post-transplant</li> <li>• Health risks and surveillance post-transplant</li> <li>• Sexuality</li> <li>• Safe living after transplantation</li> <li>• QOL issues- post transplant</li> </ul>
<b>Total</b>	<b>96 hours</b>	

List of skills to be practiced in the skill lab (46 hours include demonstration by the faculty and practice by the students)

- Family education
- Discharge health education
- Counselling
- Handing over of transplant patient
- Documentation & verification
- Monitoring signs of rejection
- Administration of immunosuppressant
- Nutritional assessment
- Diet planning for post-transplant patients



- Health assessment
- Monitoring of immunosuppressive client

**The skills listed under the Specialty courses such as Foundations of Transplant Nursing Practice, Transplant Nursing I and Transplant Nursing II are taught by the faculty in skill lab. The students after practicing them in the lab, will continue to practice in the Transplant unit. The logbook specifies all the requirements to be completed and the list of skills that are to be signed by the preceptor once the students develop proficiency in doing the skills independently.**

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### **Recommended Courses to Complete:**

- BLS
- ACLS
- PALS

## **APPENDIX 1**

Equipment list for a transplant unit (Other equipment may be added as per institutional need)

1. ICU Adjustable electronic cot with mattress – 10
2. IV stand – 20
3. Bed side locker – 11 (10 – patient; 1 – stock)
4. Over bed trolley – 10
5. Dressing trolley (Small) – 5
6. Dressing trolley (medium) – 2
7. Syringe pump – 20
8. Infusion pump – 15
9. Monitors- 11 (10 –patient; 1- stock)
10. Transport monitor/pulse oximeter – 2
11. Ventilators – 5
12. Portable ventilators -1
13. ABG machine – 1
14. ECG machine – 1
15. Ultrasound machine – 1
16. Doppler machine – 1
17. Defibrillator – 2
18. Peripheral Nerve Stimulator – 1
19. Blood warmer & Fluid Warmer –1

20. Patient warmer – 2
21. Sequential Compression Device – 5
22. LED shield – 1
23. Crash cart – 1
24. Transfer trolley – 4
25. OT instrument trolley - 2
26. Safe slider – 2
27. Bain circuit – 6
28. Oxygen flow meter – 15
29. Suction port with jar – 10
30. Air flow meter /pulmoaid– 2
31. Refrigerator – 2 (1- feeds, 1- drugs)
32. Metal footstep/foot stool – 7
33. Ambulation chair – 5
34. Flat trolley -1
35. Continuous Renal Replacement Therapy (CRRT) machine -2
36. Spotlight – 2
37. Glucometer – 5
38. Ambu bag with different sizes – 10 sets
39. Fiberoptic bronchoscope – 1
40. Intubating videoscope - 1
41. Trays with sterile sets /disposable sets for various procedures (Eg. Insertion of central venous catheter, tracheostomy etc.)
42. Dialyzer

## APPENDIX 2

### ASSESSMENT GUIDELINES (including OSCE guidelines) INTERNAL ASSESSMENT (Theory and practical)

#### I YEAR

#### 1. Theoretical Basis for Advanced Practice Nursing

##### **College examination of theory only: 50 marks**

##### **Internal assessment:**

Test paper/Quiz-10 marks

Written assignment/term paper-10 marks (Global and national healthcare trends & policies)

Clinical seminar (Clinical/Care pathway in specific clinical condition/ Application of specific nursing theory)- 5 marks

**Final theory college exam: 25 marks**

**Total Marks: 50 marks**

#### 2. Research Application and Evidence Based Practice in Transplant Nursing

##### **Theory:**

Test papers: 20 marks

Written assignment: 5 marks (Literature review/Preparation of research instrument)

Journal club: 5 marks (Analysis of research evidence for transplant nursing competencies)

**Total: 30 marks**

#### 3. Advanced skills in Leadership, Management and Teaching Skills

##### **Theory:**

Test papers: 15 marks

Journal club (Trends in Leadership/management/Teaching): 5 marks

Written assignment: 5 marks (workplace violence)

Microteaching: 5 marks

**Total: 30 marks**

**4. Advanced Pathophysiology & Advanced Pharmacology relevant to Transplant Nursing**

**Theory:**

Test papers and Quiz: 20 marks (Pathophysiology-10, Pharmacology-10)

Drug studies-5 marks (Drug study and presentation)

Case presentation and case study report (Pathophysiology): 5 marks

**Total: 30 Marks**

**5. Advanced Health/physical Assessment**

**Theory:**

Test papers: 20 marks

Written assignment: 10 marks (Diagnostic/investigatory reports-interpretation and analysis of findings)

**Total: 30 marks**

**Practicum:**

Clinical performance evaluation: 10 marks

End of posting exam (OSCE)-10 marks

Case presentation and case study report -5 marks

Internal OSCE: 25 marks

**Total Internal practical: 50 marks**

**End of posting exam can be conducted in Transplant unit**

**II Year**

**1. Foundations of Transplant Nursing Practice**

**Theory:**

Test papers and Quiz: 20

Written assignment: 10 marks (Transplant protocols)

**Total: 30 marks**

**Practicum:**

Clinical Performance evaluation: 20 marks

End of posting exam (OSCE)- 10 marks

Drug studies (Drug study and presentation): 10 marks

Case presentation and case study report (Family education/counseling): 5 marks

Case presentation (Application of Clinical/Care Pathway): 5 marks

Internal OSCE: 50 marks

**Total Internal practical: 100 marks**

**2. Transplant Nursing I**

**Theory:**

Test papers and Quiz: 20 marks

Clinical Seminar and Journal club: 10 marks

**Total: 30 marks**

**Practicum:**

Clinical performance evaluation: 20 marks

End of posting exam (OSCE)-10 marks

Clinical presentation: 10 marks

Case study report: 10 marks

Internal OSCE: 50 marks

**Total Internal practical: 100 marks**

**3. Transplant Nursing II**

**Theory:**

Test papers: 20 marks

Clinical Seminar: 10 marks

**Total: 30 marks**

**Practicum:**

Clinical performance evaluation: 20 marks

End of posting exam (OSCE)-10 marks

Clinical presentation: 10 marks

Case study report (Develop clinical/care pathway): 10 marks

Internal OSCE:50 marks

**Total Internal practical: 100 marks**

**End of posting exam can be conducted in transplant ICU / Step down unit**

**4. Dissertation**

Practicum: 50 marks

**EXTERNAL (FINAL) EXAMINATION (As per schedule in syllabus)**

**Theory: Short answer and essay type questions (Weightage can be decided by the University) {Essay 2x15 marks=30, Short answers 5x6marks=30, Very short 5x2marks=10}**

**OSCE GUIDELINES FOR INTERNAL AND EXTERNAL PRACTICAL EXAMINATION**

**I YEAR**

**I. HEALTH ASSESSMENT**

**INTERNAL**

**OSCE: 25 marks**

**CORE COMPETENCY DOMAINS**

1. Focused history taking of adult patient
2. Focused physical examination of adult patient
3. Focused history taking of pediatric patient
4. Focused physical examination of pediatric patient
5. Interpretation of history and physical examination findings
6. Interpretation of results of lab and diagnostic tests
7. Monitoring clinical parameters

**Number of stations: 5 (4+1 Rest station)**

**Time for each station: 10 minutes**

**Marks for each station: 5 marks (As per competency Check list and allotted marks)**

**Total: 4x5=20 marks**

**Oral exam=5 marks**

**Total =25 marks**

**EXTERNAL**

**OSCE: 50 marks**

## **CORE COMPETENCY DOMAINS**

1. Focused history taking of adult patient
2. Focused physical examination of adult patient
3. Focused history taking of pediatric patient
4. Focused physical examination of pediatric patient
5. Interpretation of history and physical examination findings
6. Interpretation of results of lab and diagnostic tests
7. Monitoring clinical parameters

**Number of stations: 10 (8+2 Rest stations)**

**Time for each station: 10 minutes**

**Marks for each station: 5 marks (As per competency Check list and allotted marks)**

**Total: 8x5=40 marks**

**Oral exam=10 marks**

**Total =50 marks**

**On completion of procedural competencies in log book and clinical requirements, the NP student is qualified to appear for final practical examination**

## **II YEAR**

### **FOUNDATIONS OF TRANSPLANT NURSING**

#### **INTERNAL**

**OSCE: 50 Marks**

## **CORE COMPETENCY DOMAINS**

1. Focused history taking, physical examination and interpretation of results of adult patient
2. Focused history taking, physical examination and interpretation of results of pediatric patient
3. Monitoring competencies (Invasive and noninvasive)
4. Development of care plan
5. Family education and counseling
6. Transplant unit preparation
7. Infection control
8. Therapeutic interventions including drug administration

**Number of stations: 5 (4+1 Rest station)**

**Time for each station: 10 minutes**

**Marks for each station: 10 marks (As per competency check list and allotted marks)**

**Total: 10x4=40 marks**

**Oral exam=10 marks**

**Total =50 marks**

## **EXTERNAL**

**OSCE: 100 marks**

### **CORE COMPETENCY DOMAINS**

1. Focused history taking, physical examination and interpretation of results of adult patient
2. Focused history taking, physical examination and interpretation of results of pediatric patient
3. Monitoring competencies (Invasive and noninvasive)
4. Development of care plan
5. Family education and counseling
6. Transplant unit preparation
7. Infection control
8. Therapeutic interventions (Emergency procedures) including drug administration

**Number of stations: 10 (8+2 Rest stations)**

**Time for each station: 10 minutes**

**Marks for each station: 10 marks (As per competency Check list and allotted marks)**

**Total: 8x10=80 marks**

**Oral exam=20marks**

**Total =100marks**

## **TRANSPLANT NURSING I & II**

### **INTERNAL**

**OSCE-50 marks**

### **CORE COMPETENCY DOMAINS**

1. Focused history taking, physical examination and interpretation of findings of adult and pediatric patient
2. Monitoring competencies (Invasive and noninvasive)
3. Evaluation of brainstem functioning
4. Family education and counseling for organ donation
5. Counseling of the transplant recipient
6. Development of plan of care/care pathway
7. Preparation of operating room for transplant surgery
8. Drug administration
9. Therapeutic interventions

**Number of stations: 5 (4+1Rest station)**

**Time for each station: 10 minutes**

**Marks for each station: 10 marks (As per competency check list and allotted marks)**

**Total: 10x4=40 marks**

**Oral exam=10 marks**

**Total =50 marks**

## **EXTERNAL**

**OSCE:100 marks**

**CORE COMPETENCY DOMAINS**

1. Focused history taking, physical examination and interpretation of findings of adult and pediatric patient
2. Monitoring competencies (Invasive and noninvasive)
3. Evaluation of brainstem functioning
4. Family education and counseling for organ donation
5. Counseling of the transplant recipient
6. Development of plan of care/care pathway
7. Preparation of operating room for transplant surgery
8. Drug administration
9. Therapeutic interventions

**Number of stations: 10 (8+2Rest stations)**

**Time for each station: 10 minutes**

**Marks for each station: 10 marks (As per competency check list and allotted marks)**

**Total: 8x10=80 marks**

**Oral exam=20marks**

**Total =100marks**

**On completion of procedural competencies in log book and clinical requirements, the NP student is qualified to appear for final practical examination**

**Appendix 3**

**CLINICAL LOGBOOK FOR NURSE PRACTITIONER (NP) IN TRANSPLANT NURSING PROGRAM  
(Specific competencies/Skills)**

**APPENDIX 3a – Clinical Log Book I YEAR**

**I YEAR**

<b>S. No</b>	<b>SPECIFIC COMPETENCIES / SKILLS</b>	<b>NUMBER PERFORMED</b>	<b>DATE</b>	<b>SIGNATURE OF THE PRECEPTOR*/ FACULTY</b>
<b>I</b>	<b>RESEARCH APPLICATION AND EVIDENCE BASED PRACTICE</b>			
1	Preparation of research instrument			
2	Preparation of a manuscript for publication (I year / II year)			
3	Writing systematic review / literature review			
4	Dissertation (II Year) Topic:			
<b>II</b>	<b>ADVANCED SKILLS IN LEADERSHIP, MANAGEMENT, AND TEACHING</b>			
1	Preparation of staff patient assignment			
2	Preparation of unit budget			

3	Preparation of staff duty roster			
4	Patient care audit			
5	Preparation of nursing care standards / protocols			
6	Management of equipment and supplies			
7	Monitoring, evaluation, and writing report related to infection control			
8	Micro teaching / patient education sessions			
9	Preparation of teaching plan and media for patients and staff			
10	Planning and conducting OSCE/OSPE			
11	Construction of tests			
<b>III</b>	<b>HEALTH ASSESSMENTS</b>			
1	Comprehensive history taking			
2	Focus history taking (System wise)			
3	Comprehensive physical examination			
4	Focused physical assessment (System wise)			
4.1	Respiratory system			
4.2	Cardiac system			
4.3	Gastrointestinal			
4.4	Nervous			
4.5	Renal			
5	Age specific History & physical examination			
5.1	Geriatric			
5.2	Adult			
5.3	Child			
<b>IV</b>	<b>DIAGNOSTIC PROCEDURES</b>			
<i>1</i>	<i>Collecting blood sample:</i>			
1.1	Biochemistry			
1.2	Clinical pathology			
1.3	Microbiology			



1.4	ABG			
1.5	Blood culture			
<b>2</b>	<b><i>Assisting procedures:</i></b>			
2.1	Paracentesis			
2.2	Liver biopsy			
2.3	Renal biopsy			
2.4	Bone marrow aspiration			
<b>3</b>	<b><i>Witnessing procedures:</i></b>			
3.1	PET Scan			
3.2	ERCP			
3.4	Endoscopy			
3.5	MRI / CT			
3.6	Ultrasound			
3.7	Echocardiogram			
3.8	ECMO			
3.9	Renal doppler / angiogram			
<b>V</b>	<b>Basic competencies:</b>			
1	Admission			
2	Transfer			
3	Discharge/LAMA			
4	Medico-legal compliance			
5	Family education			
<b>6</b>	<b><i>Setting up, use and maintenance of transplant equipment:</i></b>			
6.1	Monitor			
6.2	Transducer / pressure bag			
6.3	Temperature probes			
6.4	SpO <sub>2</sub> probes			
6.5	Sequential compressing device			
6.6	12 –lead ECG monitor			

6.7	Blood / fluid warmer			
6.8	Syringe pump			
6.9	Infusion pump			
6.10	Alpha / Air mattress			
<b>7. Monitoring and Interpretation of Critical Parameters:</b>				
7.1	Arterial Blood Gas (ABG)			
7.2	Oxygen saturation			
7.3	Endotracheal tube cuff pressure			
7.4	Hemodynamics			
7.5	Electrocardiogram (ECG)			
7.6	Chest X ray			
7.7	Noninvasive BP monitoring			
7.8	Glasgow Coma Score			
7.9	Sedation Score			
7.10	Pain Score			
7.11	Braden Score			
7.12	Bowel sounds			
7.13	GRBS			
<b>8</b>	<b>Transplant care</b>			
8.1	Pre transplant work up			
8.2	Fluid management in renal transplant			
8.3	Therapeutic drug monitoring			
8.4	Therapeutic plasma exchange			
8.5	Wound Management			
8.6	Management of graft rejection			
9	Counseling:			
9.1	Individual			
9.2	Family			
10	Creating public awareness on organ donation			

\* - When the student is found competent to perform the skill, it will be signed by the preceptor.

**Students:** Students are expected to perform the listed skills/competencies many times until they reach level 3 competency, after which the preceptor signs against each competency.

**Preceptors/faculty:** Must ensure that the signature is given for each competency only after they reach level 3.

- Level 3 competency denotes that the NP student can perform that competency without supervision
- Level 2 Competency denotes that the student can perform each competency with supervision
- Level 1 competency denotes that the student is not able to perform that competency/skill even with supervision

**Signature of the Program coordinator/Faculty**

**Signature of the HOD/Principal**

**APPENDIX 3b – Clinical Logbook II YEAR**

S. No.	SPECIFIC COMPETENCIES/ SKILLS	NUMBER PERFORMED	DATE	SIGNATURE OF THE PRECEPTOR*/ FACULTY
<b>ADVANCED COMPETENCIES</b>				
1	<i>Setting up, use and maintenance of Transplant care equipment:</i>			
1.1	Ventilator			
1.2	Defibrillator			
1.3	CPAP / BiPAP			
1.4	CRASH trolley			
2	End of life care			
3	After life care			
4	Infection control practices			
5	Standard precautions			
6	Disinfection/sterilization			
7	BLS			
8	ACLS			
9	<i>Monitoring and Interpretation of Critical Parameters:</i>			
9.1	Capnography			
9.2	PiCCO			
9.3	Intracranial Pressure (ICP)			

9.4	Invasive BP monitoring			
10	Administration of medication:			
10.1	Sedation			
10.2	Muscle relaxant			
10.3	Electrolyte correction			
10.4	Insulin infusion			
10.5	Inotrope administration			
10.6	Corticosteroid			
10.7	Administration of IgG / ATG			
11	Management of Cardiovascular Alterations:			
11.1	Fluid administration (Colloid/Crystalloid)			
11.2	Blood and blood product administration			
11.3	Insertion and Care of CVP line			
11.4	Removal of CVP line			
11.5	Assisting with insertion of arterial line			
11.6	Care of arterial line			
11.7	Removal of arterial line			
11.8	Assisting with insertion of pulmonary artery catheter			
11.9	Blood collection from arterial line			
12	Management of Pulmonary Alterations			
12.1	Airway application			
12.2	Laryngeal mask airway			
12.3	Assisting with intubation			
12.4	Care of ET tube			
12.5	Extubation			
12.6	Assisting for tracheostomy insertion			
12.7	Tracheostomy care and suctioning			
12.8	Endotracheal suctioning – Open			
12.9	Endotracheal suctioning – Closed			

12.10	Postural drainage			
12.11	Nebulization			
12.12	Care of patient on Mechanical ventilator			
12.13	Non – invasive ventilation			
12.14	Connecting to Ventilator			
12.15	Weaning from ventilator			
12.16	Use of T-tube and Venturi devices			
12.17	Weaning from tracheostomy			
12.18	Chest physiotherapy			
13	Organ Donation Process			
13.1	Care of potential donor			
13.2	Identification of potential donor			
13.3	Screening of potential donor			
13.4	Brainstem death evaluation			
13.5	Family counseling for organ donation			
13.6	Authorizing & consenting process			
13.7	Safe organ transport			
14	Management of Renal Alterations			
14.1	Assisting with cannulation for hemodialysis			
14.2	Starting and closing of hemodialysis			
14.3	Care of patient on hemodialysis			
14.4	Initiating peritoneal dialysis			
14.5	Care of patient on peritoneal dialysis			
15	Management of Gastrointestinal Alterations			
15.1	Nutritional assessment			
15.2	Therapeutic diet planning			
15.3	Gastrostomy / Jejunostomy feeding			
15.4	Parenteral nutrition			
16	Management of Endocrine Alterations			
16.1	Titration insulin			
16.2	Calculation of steroid administration			
17	Ordering procedures and investigations			

17.1	ECG			
17.2	ABG			
17.3	Chest X ray			
17.4	Ultrasound			
17.5	Biochemistry investigations			
17.6	Microbiology investigations			
18	Ordering Treatment			
18.1	Nebulization			
18.2	O2 therapy			
18.3	Chest physiotherapy			
18.4	Insertion and removal of urinary catheter			
18.5	Test feeds			
18.6	Surgical dressing			
18.7	Suture removal			
18.8	Starting Hemodialysis			
18.9	Closing Hemodialysis			
18.10	Application of Ichthammol Glycerin / Magnesium Sulphate dressing for Thrombophlebitis / extravasation.			
18.11	Hot and cold applications			
19	Operation room competencies for organ retrieval & transplant			
19.1	Preoperative Document Verification			
19.2	Handing over of patient <ul style="list-style-type: none"> <li>• to immediate Post-Operative ICU</li> </ul>			
19.3	Maintaining Nurses' documentation in OT			
19.4	Setting up of Operation Trolley			
19.5	Assisting in OT as Scrub Nurse – organ donation			
19.6	Assisting in OT as Scrub Nurse - transplantation			
19.7	Assisting in OT as Circulatory Nurse			
19.8	Assist with Organ Perfusion			
19.9	Insulin Drip Management			

19.10	OT Fumigation			
19.11	Assist in Organ Harvesting			
20	Care of recipient			
20.1	Counselling – individual / family for transplant			
20.2	Care of recipient – pre and post operative			
20.3	Monitoring of immediate transplant patients			
20.4	Administration and monitoring of immunosuppressants			
21	Post transplant Health education – individual & family			

\* - When the student is found competent to perform the skill, it will be signed by the preceptor.

Students: Students are expected to perform the listed skills/competencies many times until they reach level 3 competency, after which the preceptor signs against each competency.

Preceptors/faculty: Must ensure that the signature is given for each competency only after they reach level 3.

- Level 3 competency denotes that the NP student can perform that competency without supervision
- Level 2 Competency denotes that the student can perform each competency with supervision
- Level 1 competency denotes that the student is not able to perform that competency/skill even with supervision

NOTE: 5-10% of procedures that are rare can be practiced in skill lab and attained level 3 competency.

Signature of the Program coordinator/Faculty

Signature of the HOD/Principal

#### Appendix 4

#### CLINICAL REQUIREMENTS FOR NURSE PRACTITIONER (NP) IN TRANSPLANT NURSING

S. No.	CLINICAL REQUIREMENT	DATE	SIGNATURE OF THE PRECEPTOR/FACULTY
1	Clinical Seminar/Journal Club/ Clinical Conference		
1.1	Foundations of Transplant Nursing (Clinical conference) Title of the topic		

1.2	<b>Transplant Nursing I (Clinical Seminar)</b> <i>Title of the topic:</i>		
1.3	<b>Transplant Nursing I (journal club)</b> <i>Title of the topic:</i>		
1.4	<b>Transplant Nursing II (Clinical seminar)</b> <i>Title of the topic:</i>		
1.5	<b>Transplant Nursing II (Journal club)</b> <i>Title of the topic:</i>		
2	<b><i>Clinical Rounds (With Nursing staff, faculty, students)- Clinical/Case presentation (Written reports are for submission)</i></b>		
2.1	<b>Foundations of Transplant Nursing (Family education/counseling) written report</b> <i>Title of the topic:</i>		
2.2	<b>Foundations of Transplant Nursing (Transplant care pathway)</b> <i>Title of the topic:</i>		
2.3	<b>Transplant Nursing I (clinical presentation condition)</b> <i>Name of the Clinical condition:</i>		
2.4	<b>Transplant Nursing I (Case study report)</b> <i>Name of the clinical condition:</i>		
2.5	<b>Transplant nursing II (Clinical Presentation)</b> <i>Name of the clinical condition:</i>		
2.6	<b>Transplant nursing II (Case study report)</b> <i>Name of the clinical condition:</i>		
	<b>Drug studies (drugs listed under standing orders) Bedside presentation</b> <b>(Five written reports)</b>		
2.7	<i>Name of the drug:</i>		
2.8	<i>Name of the drug:</i>		
2.9			
2.10			



<b>2.11</b>			
<b>2.12</b>			
<b>2.13</b>			
<b>2.14</b>			
<b>2.15</b>			
<b>2.16</b>			
<b>3</b>	<b><i>Interdisciplinary Clinical Rounds (With transplant team) – Clinical/Case Presentation</i></b>		
<b>3.1</b>	<b>Transplant Nursing I</b>		
	<i>Name of the clinical condition:</i>		
<b>3.2</b>			
<b>3.3</b>			
<b>3.4</b>			
<b>3.5</b>	(Case study report)		
	<b>Transplant Nursing II</b>		
<b>3.6</b>			
<b>3.7</b>			
<b>3.8</b>			
<b>3.9</b>	(Case Study report)		
<b>3.10</b>	Written report (Developed Clinical/ Care pathway)		

**Note:** Clinical presentation can be written for case study report

**Signature of the Program coordinator/Faculty**

**Signature of the HOD/Principal**

**CLINICAL EXPERIENCE DETAILS**

<b>Transplant Unit</b>	<b>Clinical Condition</b>	<b>Number of days care given</b>	<b>Signature of Faculty/Preceptor</b>


**Signature of the Program coordinator/Faculty**

**Signature of the HOD/Principal**

**Appendix 5**

**STANDING ORDERS**

**NURSE PRACTITIONER (NP) PROGRAM IN ORGAN TRANSPLANT SCIENCES TRANSPLANT NURSING**

Nurse practitioners are prepared and qualified to assume responsibility and accountability for the care of transplant patients. They collaborate with Intensivists, physicians, surgeons, and specialists to ensure accurate therapy for patients with high acuity needs. On completion of the program, the NPs will be permitted to administer drugs listed in standing orders as per the institutional protocols/standing orders. They will also be permitted to order / perform diagnostic tests/procedures and therapies

The following intravenous injections or infusions may be administered by the Nurse Practitioner in the transplant care units

**Catecholamines**

1. Adrenaline
2. Noradrenaline
3. Dopamine
4. Dobutamine

**Antidysrhythmic**

5. Adenosine
6. Amiodarone
7. Lidocaine/ Xylocard

**Adrenergic agent**

8. Ephedrine

**Bronchodilators**

9. Aminophylline
10. Deriphylline

**Non depolarizing skeletal muscle relaxant**

11. Atracurium (Vecuronium, Pancurium)

**Anticholinergic**

12. Atropine Sulphate

**Antihistamine**

13. Avil

**Antihypertensive**

14. Clonidine

15. Glycerine trinitrate

16. Isoptin

**Corticosteroid**

17. Hydrocortisone

18. Dexamethasone

**Sedatives & relaxants**

19. Valium

20. Midazolam

21. Morphine Sulphate

22. Pentazocin Lactate (Fortwin)

23. Pethidine Hydro Chloride

24. Propofol

**Electrolytes & acid base correction agents**

25. Soda bicarbonate 8.4%

26. Soda bicarbonate 7.5%

27. Magnesium sulphate

28. Potassium chloride

29. Normal Saline

30. N/2

**Antibiotics & Antifungal**

Preoperative

Postoperative

**Blood Sugar level Correction agents**

H.Actrapid

Dextrose 25%

Dextrose 5%

The following investigations and therapies may be ordered by the Nurse Practitioner

ORDERING INVESTIGATIONS	ORDERING THERAPIES
<ul style="list-style-type: none"> <li>• ECG</li> <li>• ABG</li> <li>• Chest X ray</li> <li>• Basic Bio chemistry investigations – Hb, PCV, TIBC, WBC Total, WBC differentials, ESR, Electrolytes, urea, creatinine, platelets, PT, aPTT, INR, CRP bleeding and clotting time, procalcitonin, D dimer, HbA1C, Cholesterol total, HIV, HbsAg, HCV, LFT, RFT, CBC, serum electrolytes, S.protein level</li> <li>• Basic Microbiology investigations – blood samples for culture and sensitivity, tips of vascular access and ET tube for culture, urine samples for random, micro and culture</li> </ul>	<ul style="list-style-type: none"> <li>• Nebulization</li> <li>• Chest physiotherapy</li> <li>• Insertion and removal of urinary catheter</li> <li>• Administration of oxygenation</li> <li>• TEDS</li> <li>• Surgical dressing</li> <li>• Starting and closing dialysis</li> <li>• Application of Magnesium Sulphate dressing for Thrombophlebitis / extravasation.</li> <li>• Isometric and isotonic exercises</li> <li>• Hot and cold applications</li> <li>• Prescribing supplements</li> </ul>

***INSTITUTIONAL STANDING ORDERS AND PROTOCOLS***

In every hospital, the standing orders for **drug administration** with specific dosage to be administered during emergency situations and specific therapeutic procedures / activities permitted to be performed by the NP after competency certification can be made available as guidelines for NPTN graduates. The NP students will be trained to administer these drugs and perform therapeutic procedures under supervision by preceptors/NP faculty and the competency to be certified by NP faculty. The protocols for ordering selected investigations and carrying out specific therapeutic procedures can also be available in every hospital that trains NPTN students.

**Dr. T. Dileep Kumar  
President, INC**