

TRANSPLANTATION (POSTOPERATIVE AND LIFELONG)

With current advances in technology and knowledge of immune responses at the molecular level, organ and tissue transplantation is becoming more commonplace. The most frequently transplanted organs are the kidney, liver, and heart. The major problem to be overcome is the immunologic response of the patient to donor tissues. The ability of the immune system to distinguish self from nonself is crucial to its proper functioning; therefore, in the process of transplantation, the donor/nonself can be rejected. The three forms of rejection are (1) hyperactive or hyperacute (within 48 hr), (2) acute (usually within 3–6 mo), and (3) chronic (occurring months or years after transplant). General postoperative care is similar to that for any other major abdominal or cardiothoracic surgery; however, special considerations necessitate meticulous measures to prevent infection and identify early signs of rejection.

CARE SETTING

Post-ICU plan of care addresses early recovery and long-term postdischarge community/clinic follow-up phases.

RELATED CONCERNS

Refer to (1) specific surgical plans of care for general considerations (e.g., cardiac surgery), and (2) organ-specific plans (e.g., heart failure, renal failure, cirrhosis, hepatitis), relative to issues of target organ problems following transplantation.

Peritonitis

Psychosocial aspects of care

Sepsis/septicemia

Surgical intervention

Thrombophlebitis: deep vein thrombosis

Patient Assessment Database

Refer to specific plans of care for data reflecting specific organ failure necessitating transplantation.

EGO INTEGRITY

- May report:** Feelings of anxiety, fearfulness
Multiple stressors: Impact of condition on personal relationships, ability to perform expected/ needed roles, loss of control, required lifestyle changes; financial concerns, cost of procedure/ future treatment needs; uncertainty of outcomes/personal mortality, spiritual conflicts; waiting period for suitable donation
Concerns about changes in appearance (e.g., bloating, jaundice, major scars), aesthetic side effects of immunosuppressant medications
Spiritual questioning (e.g., “Why me?” “Why should I benefit from someone else’s death?”)
- May exhibit:** Anxiety, delirium, depression; cognitive and emotional behavior changes

SEXUALITY

- May report:** Loss of libido
Concerns regarding sexual activity

SOCIAL INTERACTIONS

- May report:** Reactions of family members
Conflicts regarding family member(s) ability/willingness to participate, e.g., financial, organ/bone marrow donation, postprocedure support
Concern about benefiting from other person’s death
Concern for family member who must take on new responsibilities as roles shift

TEACHING/LEARNING

- May report:** Previous illnesses, hospitalizations, surgeries
Lack of improvement/deterioration in condition

Beliefs about transplantation
 History of alcohol/drug abuse, disease resulting in organ failure

Discharge plan considerations: **DRG projected mean length of inpatient stay: Dependent on organ transplanted**
 May need assistance with ADLs; shopping, transportation, ambulation; managing medication regimen
 Refer to section at end of plan for postdischarge considerations.

DIAGNOSTIC STUDIES (DEPENDENT ON SPECIFIC ORGAN INVOLVEMENT)

General preoperative screening studies include:

Chest x-ray: Provides information about status of lungs and heart.

CT/MRI scan: Reveals status of body systems and organs, including size, shape, and general function of major blood vessels; organ size for best match with donor organ; and potential sources of postoperative complications. Rules out presence of cancer, which would contraindicate transplantation.

Total-body bone scan: Evaluates status of skeletal system to determine presence/absence of bone cancer.

Specific blood and tissue typing: As may be required for donor-recipient matching.

Dental evaluation: To rule out oral infection or abscessed teeth.

Ear, nose, and throat evaluation: To rule out sinus infection.

Renal function studies (e.g., IV pyelogram, creatinine clearance): Determines functional status of kidneys.

Pulmonary function studies: Determines lung function and/or limitations that may complicate recovery.

CBC: Identifies anemia, which can reduce oxygen-carrying capacity, and other blood factors that may affect recovery.

Biochemical studies: Various tests done as indicated in addition to electrolytes, immune status.

Screening tests: To detect presence/type of hepatitis; HIV, viral titer (e.g., CMV, herpes).

ECG: Screens cardiac status, e.g., electrical conduction/dysrhythmias, signs of infarcts/hypertrophy.

NURSING PRIORITIES

1. Prevent infection.
2. Maximize organ function.
3. Promote independent functioning.
4. Support family involvement and coping.

DISCHARGE GOALS

1. Free of signs of infection.
2. Signs of rejection absent/minimized.
3. New organ function adequate.
4. Usual activities resumed.
5. Patient/family education plan established.
6. Plan in place to meet individual needs following discharge.

NURSING DIAGNOSIS: Infection, risk for

Risk factors may include
 Medically induced immunosuppression, suppressed inflammatory response
 Antibiotic therapy
 Invasive procedures, broken skin/traumatized tissue
 Effects of chronic/debilitating disease

Possibly evidenced by
 [Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Infection Status (NOC)
 Be free of signs of infection.
 Achieve timely wound healing.

PATIENT/CAREGIVER WILL:

Risk Control (NOC)
 Demonstrate techniques, lifestyle changes to promote safe environment.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Infection Protection (NIC)</p>	
<p>Independent</p>	
<p>Screen visitors/staff for signs of infection; make sure nurse caring for patient with new transplant is not caring for another patient with infection. Maintain protective isolation as indicated.</p>	<p>Reduces possibility of patient's contracting a nosocomial infection. <i>Note:</i> Total isolation is usually restricted to patients with lung transplants or individuals with neutropenia.</p>
<p>Demonstrate and emphasize importance of proper handwashing techniques by patient and caregivers.</p>	<p>First-line defense against infection/cross-contamination.</p>
<p>Inspect all incisions/puncture sites. Evaluate healing progress.</p>	<p>Promotes early identification of onset of infection and prompt intervention.</p>
<p>Provide meticulous care of invasive lines, incisions, wounds. Remove invasive devices as soon as possible.</p>	<p>Minimizes potential for bacteria to reduce exposure/risk of infection.</p>
<p>Encourage deep breathing, coughing.</p>	<p>Mobilizes respiratory secretions and reduces risk of respiratory problems.</p>
<p>Provide/assist with frequent oral hygiene.</p>	<p>Meticulous attention to oral mucosa is necessary because immunosuppression/antibiotic therapies increase risk of opportunistic oral/mucosal infections.</p>
<p>Obtain sterile specimens of wound drainage as appropriate.</p>	<p>Identifying organism allows for appropriate treatment.</p>
<p>Collaborative</p>	
<p>Monitor laboratory tests, e.g., WBC count.</p>	<p>An upward trend from baseline could signal infection; however, a low WBC count may result from immunosuppressant therapy or from a viral infection.</p>
<p>Administer antimicrobials as indicated, e.g., levofloxacin (Levaquin), ciprofloxacin (Cipro).</p>	<p>Antibiotics may be used to treat infections, but all must be monitored for side effects and drug interactions with cyclosporine and other immunosuppressants required to prevent organ rejection.</p>

NURSING DIAGNOSIS: Anxiety [specify level]/Fear

May be related to

Unconscious conflict about essential values/beliefs
Situational crises, interpersonal transmission/contagion
Threat to self concept [perceived or actual]; organ rejection, threat of death
Side effects of steroids and/or cyclosporine

Possibly evidenced by

Increased tension, apprehension, uncertainty
Expressed concerns
Somatic complaints
Sympathetic stimulation

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Anxiety [or] Fear Control (NOC)

Appear relaxed and report anxiety is reduced to a manageable level.
Verbalize awareness of feelings.
Identify healthy ways to deal with anxiety.
Use resources/support systems effectively.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Anxiety Reduction (NIC)</p> <p>Independent</p> <p>Discuss patient's posttransplant expectations and fears, including physical appearance, lifestyle changes, and concern about recurrence of disease/condition that precipitated the need for the transplant.</p> <p>Encourage patient to discuss feelings and concerns about situation and to express fears.</p> <p>Discuss beliefs/concerns that are commonly held regarding source of organ.</p>	<p>Depending on past experience and exposure to others with transplants, patient may have unrealistic ideas and real concerns about what may happen (e.g., organ rejection, effects of required medications, limitations associated with immunosuppression). Even with effective preoperative teaching, patient will continue to have new concerns or suppressed thoughts and beliefs, which can surface during recovery, e.g., recurrence of disease (such as hepatitis C) in the transplanted organ or chronic rejection.</p> <p>Helps identify issues and can lead to problem solving. Patient may experience anxiety about many things (e.g., physical limitations, cognitive changes, role changes in family). These anxieties change frequently; some are persistent, and new ones arise. Serious anxiety, delirium, and depression are the most commonly reported postoperative psychiatric problems.</p> <p>Cultural/spiritual beliefs may lead patient to question whether organ from someone of another race or particular group may change own sense of self-identity/sexuality. <i>Note:</i> Some patients may use denial to deal with concerns about the organ donor. A lack of interest or curiosity about the donor may indicate donor denial.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Anxiety Reduction (NIC)</p> <p>Independent</p> <p>Answer patient’s questions about donor honestly, but refrain from providing unrequested information.</p> <p>Identify/encourage use of previously successful coping behaviors.</p> <p>Help patient focus on one “problem” at a time.</p> <p>Discuss possibility and normalcy of mood swings.</p> <p>Encourage open communication between SO/family and patient within safe environment.</p> <p>Provide opportunity for patient and SO/family to meet with other(s) who have experienced a similar and successful transplant.</p> <p>Identify possible actions to limit physical effects or manifestations of long-term steroid/cyclosporine use.</p>	<p>Excess information may add to survivor guilt, distracting patient from focusing on business of recovery.</p> <p>Under stress, patient may not remember what has worked in the past; discussion can refresh memories of successful behaviors and promote repetition.</p> <p>Dealing with one issue at a time seems to make it more manageable. Provides sense of success and opportunity to build on each success.</p> <p>Feelings of euphoria and depression are not uncommon, are usually short-lived, but may persist, especially with use of steroids.</p> <p>Free expression of feelings/beliefs can lead to clarification and problem solving of different views. When concerns or beliefs are hidden from one another, additional stress/adverse effects may result.</p> <p>Sharing experiences and hearing about successes and universal problems can lessen patient’s/SO’s anxieties, promote hope, and provide a role model.</p> <p>Learning about clothing styles, makeup techniques, use of bleach or mild depilatory to reduce facial hair can enhance patient’s appearance and reduce anxiety about social rejection.</p>
<p>Collaborative</p> <p>Refer to spiritual advisor as indicated.</p> <p>Refer to social worker, other professionals as indicated.</p>	<p>Facing one’s mortality may provoke feelings of anxiety and questions about one’s spiritual beliefs and practices.</p> <p>Provides assistance with readjustment to life following major life event.</p>

NURSING DIAGNOSIS: Coping, [Individual] effective/Family, risk for compromised/disabled

Risk factors may include

Situational crises; family disorganization and role changes
Prolonged disease exhausting supportive capacity of SO/family

Possibly evidenced by

[Not applicable; presence of signs and symptoms establishes an *actual* diagnosis.]

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT/FAMILY WILL:

Coping (NOC)

Assess current situation accurately.
Verbalize awareness of own coping abilities.
Meet psychological needs as evidenced by appropriate expression of feelings, identifying options and resources.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Coping Enhancement/Family Integrity Promotion (NIC)</p> <p>Independent</p> <p>Encourage and support patient/family in evaluating lifestyle. Discuss implications for the future.</p> <p>Assess patient's/family's current functional status and note how transplant is affecting ability to cope.</p> <p>Determine additional outside stressors (e.g., family, social, work environment, or nursing/health care management).</p> <p>Provide ongoing information about expected progression of recuperation and potential course of recovery.</p>	<p>Help patients evaluate and choose activities that are important and begin to adjust to new lifestyle of wellness. <i>Note:</i> Transplant patients sometimes cannot evaluate the seriousness of their condition or do not comprehend the risks or benefits involved in transplantation. Additionally, there may be denial about the impact of long-term treatment requirements (i.e., use of immunosuppressant drugs, biopsies, blood tests, and clinic visits).</p> <p>Provides a starting point to identify needs and plan care. These people have been dealing with patient's chronic disease, uncertainty of organ waiting period, and protracted postoperative recovery course, and they face a complicated medical regimen after discharge. All these factors place demands on time, energy, finances, and relationships.</p> <p>Illness and treatment demands may affect all areas of life, and problems need to be addressed and resolved to enable patient and SO to manage current situation optimally.</p> <p>Knowing what to expect helps individuals cope more effectively, encourages planning for future needs/lifestyle changes. <i>Note:</i> These patients normally require a longer postoperative recovery period because of effects of medication regimen, opportunistic infections, or episodes of organ rejection.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Coping Enhancement/Family Integrity Promotion (NIC)</p> <p>Independent</p> <p>Discuss normalcy of/monitor progression through states of acceptance of transplanted organ:</p> <p>Foreign body stage—organ feels strange, separate from own body; Partial internalization stage—protective of organ, restricts movement/activity, excessive concern regarding organ function/fragility; Complete internalization—acceptance of organ into self-concept, discusses organ only in response to direct questioning.</p> <p>Have individual/SO list previous methods of dealing with life problems and outcomes of actions.</p> <p>Active-listen and identify individual’s perceptions of what is happening, how transplant has affected view of self-family member.</p> <p>Encourage discussion between patient/family regarding future expectations.</p> <p>Collaborative</p> <p>Involve in individual/family support groups.</p> <p>Refer to spiritual resource and/or psychiatric clinical nurse specialist/psychiatrist, social worker, as indicated.</p>	<p>RATIONALE</p> <p>Sense that organ is “outside” body can be very frightening, while fixation on organ can be irritating to others.</p> <p>Understanding normalcy of feelings is reassuring. <i>Note:</i> Movement through stages is variable and regression is common, especially during early posttransplant period.</p> <p>Promotes problem solving in current situation, allows individual to build on past successes.</p> <p>Helps those involved to recognize own feelings and concerns regarding use of an organ from someone who died.</p> <p>Period of dependence during illness, concerns over possible organ rejection/life-threatening complications may lead to conflicts regarding patient’s return to an independent role.</p> <p>Provides role models, source of practical advice, and emotional support to aid in problem solving.</p> <p>May be helpful in resolving lingering/difficult concerns. <i>Note:</i> During waiting period for transplant, relationships with family members may have been strained as a result of the varied stressors involved and because patients tend to feel closer to members of the healthcare team and other patients sharing the same experiences.</p>

NURSING DIAGNOSIS: Knowledge, deficient [Learning Need] regarding prognosis, therapeutic regimen, self-care, and discharge needs

May be related to

Lack of exposure/recall
Information misinterpretation
Unfamiliarity with information resources
Cognitive limitation

Possibly evidenced by

Request for information; statement of misconception
Development of preventable complication

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Knowledge: Health Behaviors/Health Resources (NOC)

Describe measures to reduce individual risk factors to recovery/general well-being.
Initiate necessary lifestyle changes and participate in treatment regimen.
Identify community resources.
Develop plan to meet follow-up care needs.
Assume responsibility for own learning and begin to look for information and ask questions.

For routine postoperative instructions, refer to CP: Surgical Intervention.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p>	
<p>Include SO/family in teaching.</p>	<p>Successful recovery and long-term wellness require a coordinated effort by patient and those regularly involved with patient.</p>
<p>Provide information via multiple media, including written format, depending on level of comprehension. Include presentations by various members of the transplant team as appropriate.</p>	<p>Enhances learning experience and provides references for postdischarge review/verification of recall. Use of team members, e.g., dietitian, physical/occupational therapists, provides for personalization of teaching plan to meet individual needs.</p>
<p>Review general signs/symptoms of rejection and infection (e.g., general malaise/fatigue, dyspnea, sudden weight gain, fever/chills, sore throat, delayed healing of wound, nausea/vomiting, syncope). Review indicators specific to transplanted organ (e.g., liver rejection: pain in liver or back, lighter-colored stools, jaundice, dark-colored urine).</p>	<p>Prompt recognition and timely intervention may limit severity of complication. Acute rejection usually develops within days of transplant or may be delayed for a number of months. If detected early, rejection process can be minimized or reversed with changes in drug regimen. <i>Note:</i> Chronic rejection developing after months/years is generally irreversible.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p> <p>Emphasize necessity/verify patient ability to adhere to medical regimen and appropriate follow-up, including periodic laboratory tests (e.g., drug levels, lipid panels, organ function studies), routine examinations (e.g., dental, gynecologic), and specialty examinations (e.g., ophthalmology, gastroenterology).</p> <p>Recommend that results of laboratory tests/diagnostic studies done locally be faxed to transplant center.</p> <p>Discuss need to seek medical attention earlier than was probably done in the past.</p> <p>Discuss managing immunosuppressant therapy, including “do’s and don’ts” of specific medications, anticipated and adverse effects, interaction with other drugs, appropriate use of OTC products; adjustment of prescribed medication dosage (e.g., prednisone) during periods of stress, or with gradual decrease in immunosuppression over months/years, as appropriate.</p> <p>Encourage patient/SO to maintain a working relationship with transplant team. Include family members, caregivers in education sessions and discharge planning as appropriate.</p> <p>Recommend wearing an identification tag (bracelet, necklace, etc.).</p> <p>Identify community resources, including transplant club/support groups.</p> <p>Discuss self-monitoring routine and record keeping, e.g., chart temperature per protocol (before breakfast/dinner and when not feeling well); weigh daily before breakfast (in like clothing, same scale); blood pressure/pulse, changes in medication dosage, changes in health status/functional ability, etc.</p>	<p>Because lack of cooperation is a major cause of posttransplant complications and mortality, the patient/SO needs to understand that adherence to regimen is imperative. Routine follow-up/care by healthcare providers is necessary to maximize general well-being and to monitor effects of long-term medication regimen on other organ systems (e.g., nephrotoxic effects). Specialty examinations aid in monitoring new organ function and effect on other systems. Additionally, steroids (when used) may cause changes in visual acuity or development of cataracts/glaucoma.</p> <p>Long-term care is very complex and requires coordination and cooperation between all healthcare providers.</p> <p>Generally a “wait and see” attitude can be detrimental because a delay in treatment could result in organ damage/rejection.</p> <p>Multiple medications, often a triple therapy such as cyclosporine or tacrolimus (Prograf), sirolimus (Rapamune), and prednisone, are typically required on an ongoing/lifelong basis to prevent organ rejection. Additional drugs may be needed to manage adverse side effects of immunosuppressant therapy (e.g., infection, osteoporosis, peptic ulcers, hypertension).</p> <p>Promotes understanding and cooperation among those providing medical and psychological support in care of patient.</p> <p>In emergencies, provides immediate information to care providers relative to surgical/transplant history and medication regimen.</p> <p>Provides opportunity for patient and SO(s) to share experiences with others who are going through the same process. Providing anticipatory guidance may enhance problem solving.</p> <p>Helps care providers identify individual needs/development of complications.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p> <p>Recommend frequent oral/dental care and periodic visual inspection of oral mucosa and gums.</p> <p>Review dietary needs. Determine optimal weight, discuss expected changes associated with medication regimen.</p> <p>Identify risk factors/additional safety concerns relative to infections, e.g., avoid changing cat litter box or use of live virus vaccines; use gloves when gardening, and take proper care of wounds/tissue trauma.</p> <p>Discuss necessity of handling skin carefully, avoiding strong sunlight and using sunscreen with SPF of 15 or higher.</p> <p>Review common postoperative care needs, e.g., routine wound care, need for adequate rest, avoidance of heavy lifting/physical labor or exercise (including contact sports), and activities that stretch or put pressure on incision; when/how to resume driving and sexual activity; dietary and fluid needs/restrictions.</p> <p>Provide information about potential sexual dysfunction and encourage open communication for future discussion/support as needed.</p> <p>Encourage continuation of pre-illness daily routines and activities as appropriate.</p> <p>Discuss participation in planned exercise program and inform about Transplant Olympics as appropriate/desired.</p>	<p>Immunosuppression increases susceptibility to common opportunistic infections affecting the mouth (e.g., <i>Candida</i>, herpes simplex). Ongoing drug regimen, such as cyclosporine, can cause hypertrophy of gums, or Rapamune can cause ulcerations of the oral mucosa.</p> <p>Requirements of normal healing, as well as effects of current stress, medications, and preoperative debilitation, can exacerbate nutritional deficiencies/imbalance and cause excessive weight loss; however, undesired weight gain can also occur because food tastes better, dietary restrictions are eliminated, and prednisone stimulates appetite.</p> <p>Awareness of possible risks (including unusual sources) enable patient/family to plan for avoidance. Cat litter can transmit infectious agents such as <i>Listeria</i>. Steroid-induced skin fragility increases risk of injury from minor trauma as a result of immunosuppression.</p> <p>Steroid therapy results in skin fragility and sun sensitivity. Broken/damaged skin provides an entry for bacteria.</p> <p>Reduces likelihood of complications, aids patient/SO in determining appropriateness of activities, and enhances patient's sense of control and personal responsibility for altering activity level. <i>Note:</i> General advice for early phase: "If it hurts, don't do it."</p> <p>Decreased libido, erectile dysfunction, and impaired orgasmic ability often occur because of medication regimen, low hormone levels, impaired blood flow, fear of harm to transplanted organ, or emotional disturbances. Initially patient may be too focused on survival to address sexual issues/concerns.</p> <p>Enhances general well-being. Promotes focus on returning to "normal life," reducing sense that everything is different now.</p> <p>Restores strength, promotes sense of well-being and self-esteem, reduces risk of osteoporosis and inappropriate weight gain, and decreases hypertension.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p> <p>Identify employment concerns/risks specific to particular transplanted organ, job responsibilities, and workplace environment.</p> <p>Discuss travel needs, e.g., notify team contact person in advance regarding plans; hand carry medications when traveling by airplane; locate transplant center nearest to travel destination before leaving home.</p> <p>Stress importance of notifying future care providers of medication regimen.</p>	<p>Provides opportunity to problem-solve, plan for modifications, or seek alternative vocational options.</p> <p>Frees patient to be involved in travel if desired. May need special instructions/precautions, depending on travel destination.</p> <p>Status of immune system functioning may require prophylactic therapy for procedures (such as antibiotics with dental care).</p>

POTENTIAL CONSIDERATIONS following acute hospitalization (depending on patient's age, physical condition/presence of complications, personal resources, and life responsibilities)

Therapeutic Regimen: ineffective management—postdischarge concern, complexity of therapeutic regimen, side effects of medications, economic difficulties, prolonged nature of treatment.

Infection, risk for—immunosuppression, antibiotic therapy.

Protection, ineffective—drug therapies (corticosteroid, immune).

Knowledge deficient [Learning Need]—participation in support groups; ongoing care in collaboration with transplant team; gradual decrease of immunosuppression over months and years.