University of Kansas School of Medicine
Surgery 900, Junior Surgery Clerkship
Guidelines to Success on the Transplantation/Hepatobiliary Surgery Service

Transplant Course Director: Sean Kumer, M.D. Ph.D.
Attendings:
Ray Lynch, M.D.
Atta Nawabi, M.D.
Tim Schmitt, M.D.

Goals
The educational goals of the transplant rotation are to provide the student with an understanding of the common problems of patients with end stage organ disease both pre- and post- transplantation and basic clinical decision-making skills in this patient population applicable to their future practice.

Curriculum and Learning Objectives
These are summarized in Tables 1-6, below.

Orientation
While on this rotation students will be expected to be able to present each patient examined to the faculty on a daily basis. Complications will be presented by residents at the weekly mortality and morbidity conference.

Assessment
Much medical student education and assessment occurs during patient care activities. Assessment in this setting has the advantage of a high degree of realism and an ability to assess complex tasks and decision-making.

Student competence will be assessed as follows:
Faculty and residents will assess each student daily using questions, assignments, and feedback on real life clinical problems. By providing feedback and encouraging students to reflect on their own clinical behavior, students will become better judges of their own strengths and weaknesses.

Medical students will be determined to have achieved the intended learning outcomes of instruction if based on the direct observation of and interaction with experienced physicians, and nursing staff on rounds, in the operating room, in clinic and during case conferences if this student:

- Consistently recognizes common clinical problems in the pre-transplant patient with end stage disease and constructs appropriate diagnostic and treatment algorithms for each condition.
- Consistently appropriately evaluates the suitability for transplantation of a patient referred to the transplant center with end-stage liver and/or kidney disease in accordance with accepted listing criteria.
- Consistently develops appropriate management plans for patients with end-stage liver and/or kidney disease who develop common general surgical problems.
- Is able to identify post-transplant problems that require immediate referral to a transplant center.
- Communicates effectively to patients and their families the risks of undergoing liver and/or kidney transplantation, dialysis access and living organ donation.
- Is able to discuss the process of organ allocation and prioritization.
- Critically evaluates his/her practice on a daily basis.
Responsibilities

Students should participate in all inpatient and outpatient clinical activities and educational activities but are particularly responsible for:

1. Following the day-to-day care of all in house patients, including the evaluation of all potential organ recipients. Patients should be presented to the attending on rounds. Use the following format when presenting:
   a. Introductory statement for example “Mr. S is a 49 year old man POD (post operative day) # 3 s/p (status post) kidney transplant”
   b. His issues in the last 24 hours are….
   c. Subjective…how is the patient feeling?
   d. Objective…. examination, lab and radiology findings
   e. Analysis …assimilate the data and discuss the reasons for the above findings
   f. Plan…..present a plan of care that should include immediate and long-term (discharge) needs.

2. The organization of flowsheets, coordination of daily lab values and immunosuppression orders under the direction of the Surgery Attending on service. Be prepared to comment on changes in the patient’s allograft (organ) function and to answer questions about lab trends on rounds.

3. Performing H&P as requested in clinic or on floor.

4. Assist with donor organ recovery.

5. Assist with transplant operations.

Table 1. ESLD

Upon completion of the transplant surgery rotation all students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE

1. Recognize the following common clinical problems and construct appropriate diagnostic and management algorithms for each condition:
   a. Ascites
   b. Variceal bleeding
   c. Hepato-renal syndrome
   d. Encephalopathy
   e. Substance abuse

2. Assess the suitability for transplantation of a patient referred with ESLD with reference to:
   a. MELD scoring system (Model for End stage Liver Disease)
   b. UNOS listing criteria (United Network for Organ Sharing)
   c. Absolute and relative contraindications to transplantation

3. Outline a management plan with particular reference to the increased risk of surgery for patients with ESLD who develop the following common general surgical problems:
   a. Umbilical hernia
   b. Inguinal hernia
   c. Gallstones

SKILLS

1. Perform a paracentesis
2. Obtain informed consent
ATTITUDE
1. Demonstrate professional attitudes and values towards, colleagues, and patients.
2. Approach patients in non-judgmental and patient-centered manner with empathy and professionalism.
3. Model professionalism, respect, and enthusiasm for learning during clinical encounters.
4. Reveal self-awareness through reflection of successful and unsuccessful patient encounters.

Table 2. Liver Transplantation
Upon completion of the transplant surgery rotation all medical students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE
1. Develop a differential diagnosis and a management plan appropriate to their level of training for the following clinical scenarios in the early post liver transplant patient:
   a. Bleeding / coagulopathy
   b. Decreased urinary output
   c. Abnormal liver function tests
   d. Volume overload/ascites
   e. Fever
2. Recognize and outline a management plan for each of the following categories of post-transplant complications:
   a. Graft dysfunction / non-function
   b. Infection: bacterial, viral and fungal
   c. Rejection: acute / chronic
   d. Technical: Bleeding, biliary, arterial, wound-related
3. Recognize and outline a management plan for each of the following medical complications:
   a. Diabetes
   b. Renal Failure
   c. Drug toxicity
   d. Neurological problems
   e. Altered mental status
4. Recognize the most common post-transplant problems that require immediate referral to a transplant center:
   a. Fever
   b. Vomiting / diarrhea
   c. Dehydration

SKILLS
1. Obtain informed consent from a patient undergoing liver transplantation.
2. Evaluate the post-transplant patient for postoperative complications.
Table 3. ESRD
Upon completion of the transplant surgery rotation all medical students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE
1. Describe the different forms of dialysis access and their indications, advantages and disadvantages.
2. Explain the difference between dialysis and hemofiltration, and the basic mechanisms of peritoneal and hemodialysis.
3. Describe the role of vascular ultrasound in the evaluation of a patient for vascular access.
4. Describe the diagnosis, evaluation, and treatment of the common complications of angioaccess.
5. Develop an algorithm for selecting an appropriate form of angioaccess

SKILLS
1. Conduct an initial evaluation for hemodialysis access.
2. Educate a patient on the different forms of renal replacement therapy, including the pros and cons of each.

Table 4. Renal Transplantation
Upon completion of the transplant surgery rotation all medical students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE
1. Describe and discuss the indications and contraindications for kidney transplantation.
2. Describe and discuss the diagnosis and management of the following common categories of complications:
   a. Technical
   b. Medical
   c. Infective
   d. Immunologic
   e. Drug related

SKILLS
1. Obtain informed consent for kidney transplantation.

Table 5. Pancreas Transplantation
Upon completion of the transplant surgery rotation all medical students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE
2. Describe and discuss the indications and contraindications of pancreas transplantation.
3. Describe and discuss the diagnosis and management of the following common categories of complications:
   a. Technical
   b. Medical
   c. Infective
   d. Immunologic
   e. Drug related
SKILLS
1. Obtain informed consent for pancreas transplantation.

Table 6. Organ Donation
Upon completion of the transplant surgery rotation all medical students will be able to:

LEARNING OBJECTIVES

KNOWLEDGE
1. Describe the criteria for brain death.
2. Define donation after deceased cardiac death (DCD).
3. Assess suitability, indications and contraindications for patients undergoing living donor nephrectomy or hepatectomy.
4. Develop a differential diagnosis and management plans appropriate to their level of training for the following clinical scenarios in the postoperative liver donor:
   a. Pain management
   b. Fever
   c. Decreased oxygen saturation
   d. Elevated liver function tests
5. Identify the indications and contraindications for deceased organ donation.
6. Distinguish the following categories of deceased donors:
   a. Directed donation
   b. Extended criteria donors (ECD)
   c. High risk donors
   d. Deceased cardiac death (DCD)
7. Describe with relation to organ allocation
   a. Role of UNOS
   b. Role of organ procurement organization (OPO, Midwest Transplant Network-MTN)
   c. Kansas and Missouri consent laws
8. Discuss the following ethical dilemmas / issues:
   a. Informed consent
   b. Autonomy
   c. Solicitation
   d. Coercion