Transplant Institute

Beth Israel Deaconess Medical Center

A teaching hospital of Harvard Medical School

PANCREAS TRANSPLANT RECIPIENT INPATIENT CLINICAL PATHWAY

All patient variances are to be documented in the progress notes. This Clinical Pathway is intended to assist in clinical decision making by describing a range of generally acceptable interventions and outcomes. The guidelines attempt to define practices that meet the needs of most patients under most circumstances. However, the ultimate judgment must be made based on circumstances that are relevant to that patient and treatment may be modified according to the individual patient needs.

Patient Name:_____

Patient MRN:_____

Admit Date:_____ DC Date:_____

	PRE-OP FARR 10 OR PERIOP HOLDING AREA Date:	DAY 0 OR Date:	DAY 0 PACU Date:	POD#1 FARR 10 Date:	POD#2 FARR 10 Date:	POD#3 FARR 10 Date:	POD#4 FARR 10 Date:	POD#5 FARR 10 Date:	POD#6 FARR 10 Date:	POD#7 FARR 10 Date:	Discharge Criteria
NOTES	• Check if patient is on study • Surgery consent • Research consent, if applicable • Health Care Proxy designation per RN protocol	• Verify and sign ABO compatibility form pre-incision • Review hardcopy crossmatch • Time-out to confirm patient identity and planned procedure		• MD and nursing to review and reconcile all pre-transplant medication • Restart home meds per NG as appropriate	• MD and nursing to review and reconcile all pre-transplant medication	• MD and nursing to review and reconcile all pre-transplant medication	• MD and nursing to review and reconcile all pre-transplant medication	• MD and nursing to review and reconcile all pre-transplant medication • Restart home meds per NG as appropriate	• MD and nursing to review and reconcile all pre-transplant medication	• MD and nursing to review and reconcile all pre-transplant medication	• All pre and post transplant medications reviewed and reconciled
TESTS	• History and physical including weight • Labs: CBC, Chem 7, Ca, Mg, Phos, alb, UC, ALT, AST, ALK Phos, Bili, INR, PTT Amylase, Lipase, CXR, EKG, Type & Cross 2 units PRBC, if female and less than 55 years old, STAT HCG.- attending surgeon to review results before patient goes to the OR. • Review all luminex anti-HLA antibody results	• Glucose per anesthesia protocol	• VS per PACU protocol (see trigger criteria at right of page) • Labs: CBC, Chem 7, Amylase, Lipase, CXR, EKG • Fingerstick glucose q1h (call MD if>150)	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Pancreas US if BS>200mg/dl or per attending • If SPK, renal US if anuric or per attending discretion	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase Lipase • Fingerstick glucose q1h (call MD if>150)	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Tacro level (after minimum 1 dose Tacrolimus)	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Tacro level	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Tacro level	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Tacro level	• VS per RN protocol (see trigger criteria at right of page) • Daily weights, I&Os • Labs: CBC, Chem 7, Mg, Ca, Phos, Amylase, Lipase • Fingerstick glucose q1h (call MD if>150) • Tacro level	• VS per RN protocol (see trigger criteria at right of page) • VS measured and recorded within 1h of discharge. Call attending if any new: ○ HR <40 or >130 ○ Systolic BP<90 ○ Temp of >100.5 ○ Marked Nursing Concern
CARDIOVASCULAR	• Cardiology consult if new EKG changes • Beta blocker per protocol • If Clopidogrel bisulfate or warfarin or aspirin check with MD for continuation • Hold statins, ACE inhibitors, ARBs • Surgeon to recheck crossmatch results • Heparin 5,000 units SC q 12h	• Lasix 20-100 mg IV prior to reperfusion per surgeon request • Compression boots	• IV Heparin @ 200 units/hr – start 6-8h post-op after attending approval • Compression boots • ASA 81 mg per NG daily	• IV Heparin ; increase to 400 units per hour if HCT stable • Compression boots until ambulatory • ASA 81 mg per NG daily • Do not restart statins, ACE inhibitors, ARBs during this admission	• IV Heparin 400 units per hour • Compression boots until ambulatory • ASA 81 mg per NG daily	• Same as prior day	• Same as prior day	• D/C IV Heparin in AM • Compression boots until ambulatory • ASA 81 mg PO daily • Do not restart statins, ACE inhibitors, ARBs during this admission	• Same as prior day	• Same as prior day	
RESPIRATORY		• Intubation • Extubate in **OR** whenever possible	• O2 by face mask or nasal cannula	• Nasal cannula O2 at 2 l/min as long as patient requires PCA for pain management. • Discontinue O2 if pulse Ox>92% after 15mins of room air once PCA has been discontinued • Incentive spirometer X10 q1h while awake	• Same as prior day	• Same as prior day	• Same as prior day	• Same as prior day	• Same as prior day	• Same as prior day	• VS measured and recorded within 1h of discharge. Call attending if any new: ○ SaO2<90% and/or RR <8 or >30
IV FLUIDS/ RENAL	• D5 ½ NS @ 75cc/hour • Do not give Kayaxalate • If peritoneal dialysis, drain fluid out and examineline for signs of infection and send fluid for cell count • Protect fistula/graft • Palpate and document patency	• Normal saline or D5 NS, depending upon BS • Mannitol 12.5→25g IV • Ureteral stent per attending (if SPK)	• D5 ½ NS @ 75-150 cc/h If SPK: • D5 1/2NS @50 cc/hr AND 1/2NS @ cc/cc urine output	• D5 ½ NS @ 75-150 cc/h If SPK: • D5 1/2NS @50 cc/hr AND 1/2NS @ cc/cc urine output • IF SPK, assess need for dialysis with renal fellow on transplant rotation (no additional IV heparin during HD)	• Same as prior day	• D5 ½ NS @ 75-150 cc/h • IF SPK, assess need for dialysis with renal fellow on transplant rotation (no additional IV heparin during HD)	• Same as prior day • If outpatient dialysis will be needed, begin planning for post discharge	• Same as prior day • Do not prescribe Kayaxalate for inpatients with no gut function	• D/C IVF if tolerating clears • IF SPK, assess need for dialysis with renal fellow on transplant rotation (no additional IV heparin during HD)	• IF SPK, assess need for dialysis with renal fellow on transplant rotation (no additional IV heparin during HD)	• Arrangements made for outpatient dialysis if indicated • VS measured and recorded within 1h of discharge. Call attending if any new: ○ Urine output <50cc in 4h
DRAINS, LINES & WOUND CARE		• R IJ Triple Lumen catheter placed by anesthesia • Discuss with surgical attending if tunneled cath is to be used • Close section drain: JP drain/ Blake per attending • PA catheter if clinically indicated. Use permacath for central monitoring and infusing after clearing by wasting 10cc of blood from line • Foley catheter placement in **OR** (3 way per attending) • NG tube placement in OR	• Adhere to BIDMC central access device guideline for insertion and care • JP to bulb suction- record q4-8h depending on drainage • Continue IJ Triple Lumen catheter • Foley catheter- record output q1h • NG@WS (flush with 10cc NS q shift)	• Adhere to BIDMC central access device guideline for insertion and care • JP to bulb suction • Continue IJ Triple Lumen catheter • Foley catheter- record output q1h • NG@WS (flush with 10cc NS q shift)	• Same as prior day • Remove surgical dressing	• Same as prior day • Change dressing daily or PRN • Check with attending surgeon to D/C Foley	• Adhere to BIDMC central access device guideline for insertion and care • Remove JP if output is <30cc/day before • Continue IJ Triple Lumen catheter • Change dressing daily or PRN • Check with attending surgeon to D/C NG	• Same as prior day	• Same as prior day	• Same as prior day	• Patient able to care for wound and drains • Drain care if patient is not independent with their care
GI/ENDOCRINE/ NUTRITION	• NPO, except for PO Mycophenolate Mofetil • Insulin per protocol; if patient on insulin pump, then D/C	• NPO • Regular Insulin IV infusion to keep BS 100-150 mg/dl	• NPO • Regular Insulin IV infusion to keep BS 100-150 mg/dl	• NPO • Do not prescribe Kayaxalate for inpatients with no gut function • IV insulin 1-3units/h. Call attending if glucose>150 • Joslin consult • Pantoprazole 40mg IV daily • Docusate sodium 100mg NG/PO BID	• NPO • IV insulin 1-3units/h. Call attending if glucose>150 • Pantoprazole 40mg IV daily • Docusate sodium 100mg NG/PO BID	• NPO • No further insulin (IV or SC) without checking with attending • Pantoprazole 40mg PO/NG daily • Docusate sodium 100mg NG/PO BID	• Begin sips of clears • Pantoprazole 40mg PO/NG daily • Docusate sodium 100mg NG/PO BID	• Clears – advance as tolerated • Pantoprazole 40mg PO daily • Docusate sodium 100mg PO BID	• Regular diet • Pantoprazole 40mg PO daily • Docusate sodium 100mg PO BID	• Same as prior day	• Adequate PO intake
NEURO/ PAIN/ COMFORT	• Anesthesia consult	• Blanket warmer on lower body	Target pain score 1-4 • PCA Morphine 1-4mg IV q1-2h If Morphine not tolerated or ineffective: • Hydromorphone 0.5-2mg IV q1-2hr PRN • Ondansetron 4mg IV PRN nausea AND/OR Prochlorperazine 5-10 mg IV q6-8h PRN nausea	Target pain score 1-4 • Same as prior day	Target pain score 1-4 • PCA Morphine 1-4mg IV q1-2h on demand If Morphine not tolerated or ineffective: • Hydromorphone 0.5-2mg IV q1-2hr PRN • Ondansetron 4mg IV PRN nausea **AND/OR** Prochlorperazine 5-10 mg IV q6-8h PRN nausea	Target pain score 1-4 • Same as prior day except: • Prochlorperazine 5-10 mg IV q6-8h PRN **AND/OR** Promethazine 5-10mg IV q6-8h PRN nausea	Target pain score 1-4 • Same as prior day except: Transition to PO • Oxycodone 5-10mg PO q4-6h (1st choice) **OR** • Hydromorphone 1-2mg PO q4-6h **OR** • Hydrocodone 1 tablet PO q4-6h • Prochlorperazine 5-10 mg PO q6-8h PRN **AND/OR** Promethazine 5-10mg PO q6-8h PRN nausea	Target pain score 1-4 • Oxycodone 5-10mg PO q4-6h (1st choice) **OR** • Hydromorphone 1-2mg PO q4-6h **OR** • Hydrocodone 1 tablet PO q4-6h • Prochlorperazine 5-10 mg PO q6-8h PRN **AND/OR** Promethazine 5-10mg PO q6-8h PRN nausea	Target pain score 1-4 • Same as prior day	Target pain score 1-4 • Same as prior day	• Pain controlled on oral meds
IMMUNOSUPPRES-SION	• Mycophenolate Mofetil 1000mg PO give on Farr 10. Administer pre-op prior to going to OR . If female and < 55 years of age, a negative pregnancy test must be confirmed prior to administration of mycophenolate mofetil. Order "on call to OR" • Methylprednisolone 500 mg IV AND • ATG 1.25 mg/kg IV (central formulation)	• Methylprednisolone 500 mg IV (after anesthesia induction • After Methylprednisolone and prior to reperfusion of pancreas, begin ATG 1.25 mg/kg at 42 cc per hour central formulation via filtered central line and pump • If unable to obtain central access, use peripheral formulation at same rate (over 4-6hrs)	• Continue ATG 1.25 mg/kg IV @42cc/h from **OR**	• Mycophenolate Mofetil 1000mg q12h PO/NG • Steroid per protocol (SEE RIGHT) • ATG 1.25 mg/kg at 42 cc/h central formulation via central line • Give half dose if platelets 50,000- 80,000 or WBC 2000 to 3000 • Hold if Platelets <50,000 or WBC <2000 • Tacrolimus start at 2mg PO q12h	• Same as prior day except: • Tacrolimus PO q12 to target trough of 10-15	• Same as prior day	• Same as prior day	• Mycophenolate Mofetil 1000mg q12h PO • Steroid per protocol (SEE RIGHT) • D/C ATG • Tacrolimus PO q12 to target trough of 10-15	• Mycophenolate Mofetil 1000mg q12h PO • D/C Steroid or resume preop Prednisone • Tacrolimus PO q12 to target trough of 10-15	• Mycophenolate Mofetil 1000mg q12h PO • Tacrolimus PO q12 to target trough of 10-15	• Immunosuppression medication management taught
ID	***HAND HYGIENE*** • If Vancomycin to be used, consider ad-ministration in the holding area • Surgical CLIP with electric razor and prep	***HAND HYGIENE*** Perioperative antibiotic prophylaxis: • Fluconazole 400mg IV 30min prior to incision • Ampicillin Sulbactam 3g IV within 30 min prior to incision and complete infusion before incision **OR** If life-threatening allergy to penicillin or cephalosporins or if known MRSA colonization or infection: • Vancomycin 1 g IV x 1 dose and Levofloxacin 500 mg IV x 1 dose within 60min prior to incision and completed prior to incision	***HAND HYGIENE*** • Ampicillin Sulbactam 3g IV q 6 hrs **OR** If Pen/ceph allergic: • Vancomycin 1g IV q12h and Levofloxacin 500mg IV q 12h **Adjust antibiotics for renal function per POE as needed	***HAND HYGIENE*** • Fluconazole 400mg PO/IV • Ampicillin Sulbactam 3g IV q 6 hrs **OR** If Pen/ceph allergic: • Vancomycin 1g IV q12h and Levofloxacin 500mg IV q 12h • Valganciclovir 900mg PO daily adjust for renal function • Nystatin 5cc Swish and Swallow 4X/day • Sulfameth/Trimeth Single Strength 1 tab PO daily **OR** • If sulfa allergy, wait until POD#4 and give Pentamadine 300mg via inhalation	***HAND HYGIENE*** • Fluconazole 400mg PO/IV • Ampicillin Sulbactam 3g IV q 6 hrs **OR** If Pen/ceph allergic: • Vancomycin 1g IV q12h and Levofloxacin 500mg IV q 12h • Valganciclovir 900mg PO daily adjust for renal function • Nystatin 5cc Swish and Swallow 4X/day • Sulfameth/Trimeth Single Strength 1 tab PO daily	***HAND HYGIENE*** • Same as prior day	***HAND HYGIENE*** • D/C Ampicillin Sulbactam • D/C Vancomycin/Levofloxacin • Valganciclovir 900mg PO daily adjust for renal function • Nystatin 5cc Swish and Swallow 4X/day • Sulfameth/Trimeth Single Strength 1 tab PO daily **OR** • If sulfa allergy, Pentamadine 300mg via inhalation once monthly	***HAND HYGIENE*** • Valganciclovir 900mg PO daily adjust for renal function • Nystatin 5cc Swish and Swallow 4X/day • Sulfameth/Trimeth Single Strength 1 tab PO daily **OR** • If sulfa allergy, Pentamadine 300mg via inhalation once monthly	***HAND HYGIENE*** • Same as prior day	***HAND HYGIENE*** • Same as prior day	
PATIENT EDUCATION/ COPING/ MENTAL STATUS/ PSYCHOSOCIAL	• RN reviews clinical pathway with patient and family • Farr 10 RN provides handout "What to expect after your surgery for the Pancreas transplant" • Transplant surgeon to visit with patient on Farr 10 or in holding area		• RN to review volume management with patient	• Case Management consult • Transplant medication teaching by trans-plant coordinators with patient/family • Transplant folder given to patient • Farr 10 RN to assess eligibility for enrollment in transplant self medication program	• Self medication and transplant care teaching • Begin discharge planning	• Self medication and transplant care teaching • Social worker assessment of psycho-social functioning and needs	• Self medication and transplant care teaching • Transplant psychologist conducts com-pliance intervention with patient and primary caregiver • Case Management evaluation for post discharge	• Self medication and transplant care teaching • Transplant medication teaching • Discharge planning	• Same as prior day	• Same as prior day	Indications for Home Care Services VNA • PT or OT recommend home PT/OT • Home IV, antibiotics, TPN or tube feeding • Wound Care: VAC dressings, draining wounds, wounds that require packing
ACTIVITY				• Fall risk assessment per nursing • Out of bed to chair 3X day • Ambulate X2 (more often as tolerated)	• Fall risk assessment per nursing • Out of bed to chair 4X day • Ambulate 3X day (more often as tolerated) • PT consult if needed	• Fall risk assessment per nursing • Out of bed to chair 4X day • Ambulate 3X day (more often as tolerated)	• Same as prior day	• Same as prior day	• Same as prior day	• Same as prior day	• Ambulatory for home and/or PT clearance

Discharge Checklist
(Check when complete)

- ☐ Adjust Tacrolimus dose for discharge
- ☐ Adjust Valganciclovir dose for discharge
- ☐ Discharge medications available
- ☐ Arrange for immunosuppression drug levels
- ☐ Set up clinic appointment in 1 week
- ☐ 7Feldberg arrangements for weekend phlebotomy
- ☐ Appointment for monthly Pentamadine for Sulfameth/Trimeth-allergic patients
- ☐ Transplant Coordinator paged (even on weekends)
- ☐ For SPK, if ureteral stent placed, appt. to urology for removal in 4-6 weeks
- ☐ Outpatient dialysis arranged (if approp)
- ☐ Contact referring nephrologist
- ☐ VNA set up (if approp)
- ☐ Arrange for lab draws
- ☐ SW referral (if covered)

SERVICE	NAME	PTS	PAGER	PHONE
Pancreas	Betsy Gray-Chrzan	A-K	36833	2-9830
Transplant	Linda Walsh	L-Z	32125	2-9827
Coordinators	*On-Call		39756	2-9700

BIDMC "Trigger" Criteria

- Heart Rate <40 or >130
- Systolic Blood Pressure < 90
- Respiratory Rate < 8 or > 30
- SaO2 <90% with Oxygen Therapy
- Urine Output <50cc in 4 hours
- Acute Change in Conscious State
- Marked Nursing Concern

TRANSFUSION TARGET GUIDE
(after POD#2 transfuse for symptoms)

NON-BLEEDING			BLEEDING	
	Day 0	POD#1		Day 0
Hct	>30	>28	Hct	>30
Plt	>50k	>50k	Plt	>100k
INR	<2.0	<2.0	INR	<1.5
Fibr	>100	>100	Fibr	>150

Pancreas Steroid Tapering Protocol

Methylprednisolone	☐ POD#1: 100mg IV ☐ POD#2: 50mg IV ☐ POD#3: 50mg IV
Prednisone	☐ POD#4: 25mg PO ☐ POD#5: 25mg PO

**Resume pre-op Prednisone dose POD#6 (if appropriate)*

VALGANCICLOVIR
Maintenance/Prophylaxis Renal Dose Adjust

CrCl	Dose	Interval
>60ml/min	900mg	Daily
40-59ml/min	450mg	Daily
25-39ml/min	450mg	q 48h
10-24ml/min	450mg	2X/week
<10ml/min	Use Ganciclovir	

CREATININE CLEARANCE EQUATIONS

MALE

IBW=50kg+(2.3kgxea.in>60 in)_____Kg
EST. CrCl=(140-age) (IBW)/(72) (SrCr)=_____mL/min

FEMALE

IBW=45Kg+(2.3kgxea.in>60in)_____Kg
EST. CrCl=(140-age) (IBW)x(0.85)/(72) (SrCr)=_____mL/min

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Contact BIDMC Transplant Institute at www.bidmc.org/transplantcare for further information

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