

UCMC – Kidney Transplant Antibody Mediated Rejection (AMR) Guidelines

EARLY Antibody-Mediated Rejection (AMR) Treatment Calendar (< 6 months post-transplant) - 1 CYCLE

NAME: _____

MRN: _____

Height (cm): _____

BSA (m²): _____

Weight (kg): _____

Date: _____

TREATMENT DAY		PRE	Day 1	Day 4	Day 7	Day 10		17 ± 3	30 ± 5	60 ± 7	90 ± 7	180 ± 14	365 ± 14
DATE:		X	Day 1	Day 4	Day 7	Day 10		Day 17	Day 30	Day 60	Day 90	Day 180	Day 365
TREATMENT	PLASMAPHERESIS 1.5 PV ^{1,2}		X	X	X	X							
	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X										
	Diphenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X										
	RITUXIMAB 375 mg/m ² IV (calculated rituximab dose, mg)		X										
	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50							
	BORTEZOMIB 1.3 mg/m ² IV push over 3-5 seconds (calculated bortezomib dose, mg)		X	X	X	X							
PRN	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		X	X	X	X							
	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X							
PR	Allograft biopsy (send all biopsies for light microscopy, electron microscopy and C4d staining)	X						X ³					
LAB / MONITORING	Renal function panel	X	X	X	X	X		X	X	X	X	X	X
	CBC with differential	X	X	X	X	X		X	X	X	X	X	X
	Liver function tests		X										
	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	X	X	X	X	X		X	X	X	X	X	X
	Donor specific antibody serum level (Hoxworth-HLA lab)	X					X	X ⁴	X	X	X	X	X
	Urine protein/creatinine ratio	X						X ⁴	X	X	X	X	X
	HBsAg and HbCAb (place orders as STAT)	X ⁵											
	IgG	X ⁶											
CD19 count (Transplant Monitor Panel)	X ⁷												

¹Patient should undergo plasmapheresis (PP) first. After completion of PP, rituximab should be administered per institutional policy, followed by bortezomib.

²Post-plasmapheresis labs: Ca²⁺ and INR

³Follow-up biopsy should be obtained approximately 1 week after treatment to assess response. Additional biopsies may be obtained per physician discretion.

⁴Send DSA and urine protein/creatinine ratio at time of biopsy.

⁵HBV reactivation can occur in patients treated with rituximab. If giving rituximab, check HBsAg and anti-HBc within 6 months before treatment initiation; no need to wait for results before administering rituximab. For patients who are actively being treated for HBV or who are HBsAg positive and/or anti-HBc positive: do not administer rituximab and consider referral to hepatology. For recipients who received a HbCAb+, HBV NAT+, or HBsAg+ donor: initiate/continue tenofovir alafenamide or entecavir prophylaxis for 1 year after rituximab.

⁶For patients receiving rituximab: If IgG <400 mg/dL, recommend administering immune globulin (IVIG) 400 mg/kg IV x1 after first plasmapheresis

⁷If patient has previously received rituximab

The following outpatient prescriptions should be provided to the patient:

- Ondansetron 4 mg PO Q8 hrs PRN for nausea/vomiting
- Loperamide 2 mg PO Q2 hrs PRN for loose stools (max: 24 mg per day)

Restart PCP & antiviral prophylaxis as per current post-transplant infectious prophylaxis guidelines

Rituximab dosing adjustments based on time since previous dose and CD19 count

Dose	Never received rituximab	Rituximab in last 365 days		Last rituximab dose > 365 days prior to treatment
		CD19 ≤ 15	CD19 > 15	
	375 mg/m ²	No rituximab	Max: 500 mg	Max: 1000 mg

EARLY Antibody-Mediated Rejection (AMR) Treatment Calendar (< 6 months post-transplant) - 2 CYCLES

NAME: _____ MRN: _____

Height (cm): _____ BSA (m²): _____

Weight (kg): _____ Date: _____

TREATMENT DAY		PRE	Day 1	Day 4	Day 7	Day 10		17	20	23	26	33 ± 3	60 ± 7	90 ± 7	180 ± 14	365 ± 14
DATE:		X	Day 1	Day 4	Day 7	Day 10		Day 17	Day 20	Day 23	Day 26	Day 33	Day 60	Day 90	Day 180	Day 365
TREATMENT	PLASMAPHERESIS 1.5 PV ^{1,2}		X	X	X	X		X	X	X	X					
	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X													
	Diphenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X													
	RITUXIMAB 375 mg/m ² IV (calculated rituximab dose, mg)		X													
	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50		50	50	50	50					
PRN	BORTEZOMIB 1.3 mg/m ² IV push over 3-5 seconds (calculated bortezomib dose, mg)		X	X	X	X		X	X	X	X					
	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		X	X	X	X		X	X	X	X					
	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X		X	X	X	X					
PR	Allograft biopsy (send all biopsies for light microscopy, electron microscopy and C4d staining)	X						X ³				X ³				
LAB / MONITORING	Renal function panel	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	CBC with differential	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Liver function tests		X					X								
	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Donor specific antibody serum level (Hoxworth-HLA lab)	X				X		X ⁴			X	X	X	X	X	X
	Urine protein/creatinine ratio	X						X ⁴				X	X	X	X	X
	HBsAg and HBcAb (place orders as STAT)	X ⁵										X	X	X	X	X
	IgG	X ⁶														
CD19 count (Transplant Monitor Panel)	X ⁷															

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LATE Antibody-Mediated Rejection (AMR) Treatment Calendar (≥ 6 months post-transplant) - 1 CYCLE

NAME: _____

MRN: _____

Height (cm): _____

BSA (m²): _____

Weight (kg): _____

Date: _____

TREATMENT DAY		PRE	1	4	7	10	13	16		23 ± 3	30 ± 5	60 ± 7	90 ± 7	180 ± 14	365 ± 14
DATE:		X	Day 1	Day 4	Day 7	Day 10	Day 13	Day 16		Day 23	Day 30	Day 60	Day 90	Day 180	Day 365
TREATMENT	PLASMAPHERESIS 1.5 PV ^{1,2}		X	X	X	X	X	X							
	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X												
	Diphenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X												
	RITUXIMAB 375 mg/m ² IV (calculated rituximab dose, mg)		X												
	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50	50	50							
PRN	BORTEZOMIB 1.3 mg/m ² IV push over 3-5 seconds (calculated bortezomib dose, mg)		X	X	X	X	X	X							
	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		X	X	X	X	X	X							
PR	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X	X	X							
	Allograft biopsy (send all biopsies for light microscopy, electron microscopy and C4d staining)	X								X ³					
LAB / MONITORING	Renal function panel	X	X	X	X	X	X	X		X	X	X	X	X	X
	CBC with differential	X	X	X	X	X	X	X		X	X	X	X	X	X
	Liver function tests		X												
	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	X	X	X	X	X	X	X		X	X	X	X	X	X
	Donor specific antibody serum level (Hoxworth-HLA lab)	X					X			X ⁴	X	X	X	X	X
	Urine protein/creatinine ratio	X								X ⁴	X	X	X	X	X
	HBsAg and HBcAb (place orders as STAT)	X ⁵													
	IgG	X ⁶													
CD19 count (Transplant Monitor Panel)	X ⁷														

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NAME: _____

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TREATMENT DAY		PRE	1	4	7	10	13	16	23	26	29	32	35	38	45 ± 3	90 ± 7	180 ± 14	365 ± 14
DATE:			Day 1	Day 4	Day 7	Day 10	Day 13	Day 16	Day 23	Day 26	Day 29	Day 32	Day 35	Day 38	Day 45	Day 90	Day 180	Day 365
TREATMENT	PLASMAPHERESIS 1.5 PV ^{1,2}		X	X	X	X	X	X	X	X	X	X	X	X				
	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X															
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	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50	50	50	50	50	50	50	50	50				
	BORTEZOMIB 1.3 mg/m ² IV push over 3-5 seconds (calculated bortezomib dose, mg)		X	X	X	X	X	X	X	X	X	X	X	X				
PRN	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		X	X	X	X	X	X	X	X	X	X	X	X				
	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X	X	X	X	X	X	X	X	X				
PR	Allograft biopsy (send all biopsies for light microscopy, electron microscopy and C4d staining)	X							X ³						X ³			
LAB / MONITORING	Renal function panel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CBC with differential	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Liver function tests		X						X									
	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Donor specific antibody serum level (Hoxworth-HLA lab)	X				X		X	X ⁴					X	X	X	X	X
	Urine protein/creatinine ratio	X							X ⁴						X	X	X	X
	HBsAg and HBcAb (place orders as STAT)	X ⁵																
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