UCMC – Kidney Transplant Antibody Mediated Rejection (AMR) Guidelines

	EARLY Antibody-Mediated Rejection (AMR) Treatment Calendar (< 6 months post-tran NAME:	splant) -	<u>- 1 CYCI</u> MRN:	<u>.E</u>		Height (cm): BSA (m^:):									
	NAME.		IVIPCIN.			- vveig	jni (kg):				Date:				
	TREATMENT DAY	PRE	Day 1	Day 4	Day 7	Day 10	\blacksquare	17 ± 3	30 ± 5	60 ± 7	90 ± 7	180 ± 14	365 ± 14		
	DATE:		Day 1	Day 4	Day 7	Day 10		Day 17	Day 30	Day 60	Day 90	Day 180	Day 365		
	PLASMAPHERESIS 1.5 PV ^{1,2}		×	Х	×	×									
=	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		Х												
REATMENT	Diphenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		Х												
2	RITUXIMAB 375 mg/m ² IV		Х												
Ž	(calculated rituximab dose, mg)									igsquare	igsquare				
_	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50				igsquare	igsquare				
	BORTEZOMIB 1.3 mg/m² IV push over 3-5 seconds		×	X	×	×									
_	(calculated bortezomib dose, mg) Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		X	X	X	X			\vdash	$\vdash \vdash$	\vdash				
Y X	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X			\vdash	\vdash	$\vdash \vdash$				
	Allograft biopsy	_		^	 ^				\vdash	\vdash	igwdot				
¥	(send all biopsies for light microscopy, electon microscopy and C4d staining)	×						X^3							
	Renal function panel	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х		
פי	CBC with differential	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х		
MONITORING	Liver function tests		Х												
ġ	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	X	Х	Х	Х	Х		X	Х	Х	Х	Х	Х		
Ξ	Donor specific antibody serum level (Hoxworth-HLA lab)	X				Х		X ⁴	Х	Х	Х	Х	Х		
ž	Urine protein/creatinine ratio	X						X ⁴	Х	Х	Х	Х	Х		
'n	HBsAg and HBcAb (place orders as STAT)	X ⁵													
LAB	lgG	X ⁶													
	CD19 count (Transplant Monitor Panel)	X ⁷													
	¹ Patient should undergo plasmapheresis (PP) first. After completion of PP, rituximab should be administered per institutional policy, followed by bortezomib. ² Post-plasmapheresis labs: Ca ²⁺ and INR ³ Follow-up biopsy should be obtained approximately 1 week after treatment to assess reponse. Additional biopsies may be obtained per physician discretion.		1. Onda 2. Loper	nsetron 4	4 mg PO mg PO 0	tions shou Q8 hrs PF Q2 hrs PRI is as per o	RN for na	usea/vo	miting s (max: 2	24 mg per	• ,	xis guide	elines		
	⁴ Send DSA and urine protein/creatinine ratio at time of biopsy.	Rituxima	ab dosino	a adiustn	nents bas	sed on tim	e since i	orevious	dose and	d CD19 c	count				
	⁵ HBV 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								last 365						
	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.			Never re	eceived i	rituximab	CD19) ≤ 15	CD19	9 > 15		365 days reatmen			
	⁶ For patients receiving rituximab: If IgG <400 mg/dL, recommend administering immune globulin (IVIG) 400 mg/kg IV x1 after first plasmapheresis	Do	ose	3	375 mg/n	n²	No ritu	ıximab	Max: 5	500 mg	Ma	ax: 1000	mg		

⁷If patient has previously received rituximab

	EARLY Antibody-Mediated Rejection (AMR) Treatment Calendar (< 6 months	post-t			YCLES		_	nt (cm):			- BS	SA (m²):			-	
Ν	JAME:	_	MRN			-	Weig	ıht (kg):			-	Date:			-	
	TREATMENT DAY	PR	E Day 1	Day 4	Day 7	Day 10		17	20	23	26	33 ± 3	60 ± 7	90 ± 7	180 ± 14	365 ± 14
	DAT	= :	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
PI	ASMAPHERESIS 1.5 PV ^{1,2}		Х	Х	Х	Х		Х	Х	Х	Х					
Ad	cetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X										\vdash			\vdash
Di	phenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		X									\vdash	\vdash			\vdash
	ITUXIMAB 375 mg/m² IV alculated rituximab dose, mg)		×													
M	ethylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50		50	50	50	50					
	ORTEZOMIB 1.3 mg/m² IV push over 3-5 seconds alculated bortezomib dose, mg)		Х	Х	Х	Х		Х	Х	Х	Х					
Oi	ndansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		Х	Х	Х	Х		Х	Х	Х	Х					
Lc	peramide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		X	X	X	X		X	Χ	Х	Х					
	lograft biopsy end all biopsies for light microscopy, electon microscopy and C4d staining)	Х						X ³				X ³				
Re	enal function panel	Х	Х	Х	Х	Х		Х	Χ	Х	Х	Х	Х	Х	Х	Х
CI	BC with differential	Х	Х	Х	Х	Х		Х	Χ	Х	Х	Х	Х	Х	Х	Х
	ver function tests		Х					Х								
Та	acrolimus serum level (or other therapeutic drug monitoring, as applicable)	Х	Х	Х	Х	Х		Х	Χ	Х	Х	Х	Х	Х	Х	Х
Do	onor specific antibody serum level (Hoxworth-HLA lab)	Х				Х		X ⁴			Х	Х	Х	Х	Х	Х
Ur	rine protein/creatinine ratio	Х						X ⁴				Х	Х	Х	Х	Х
H	BsAg and HBcAb (place orders as STAT)	X ⁵														
lg	G	X ⁶														

 X^7

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

CD19 count (Transplant Monitor Panel)

The following outpatient prescriptions should be provided to the patient:

- 1. Ondansetron 4 mg PO Q8 hrs PRN for nausea/vomiting
- 2. 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

"	lab dosing adjustments based on time since previous dose and CD19 count													
		Never received	Rituximab in	last 365 days	Last rituximab dose > 365 days prior									
		rituximab	CD19 ≤ 15	CD19 > 15	to treatment									
	Dose	375 mg/m ²	No rituximab	Max: 500 mg	Max: 1000 mg									

²Post-plasmapheresis labs: Ca²⁺ and INR

³Follow-up biopsy should be obtained approximately 1 week after treatment to assess reponse. 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

LATE Antibody-Mediated Rejection (AMR) Treatment Calendar (≥ 6 months post-transplant) - 1 CYCLE	Height (cm):	BSA (m ²):
MRN:	Weight (kg):	Date:

	IVAIVIE.	WINTA.			****									
	TREATMENT DAY	PRE	1	4	7	10	13	16	23 ± 3	30 ± 5	60 ± 7	90 ± 7	180 ± 14	365 ± 14
	DATE:		Day 1	Day 4	Day 7	Day 10	Day 13	Day 16	Day 23	Day 30	Day 60	Day 90	Day 180	Day 365
	PLASMAPHERESIS 1.5 PV ^{1,2}		Х	X	X	X	X	Х						
	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		Х											
l è	Diphenhydramine 25 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		Х											
TREATMENT	RITUXIMAB 375 mg/m² IV (calculated rituximab dose, mg)		Х											
ΙĒ	Methylprednisolone IVP (mg) (administer 30 minutes prior to bortezomib dose)		100	100	50	50	50	50						
	BORTEZOMIB 1.3 mg/m² IV push over 3-5 seconds (calculated bortezomib dose, mg)		Х	Х	Х	Х	Х	Х						
PRN	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		Х	Х	Χ	Χ	Χ	X						
4	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		Х	Х	Χ	Χ	Χ	X						
R	Allograft biopsy (send all biopsies for light microscopy, electon microscopy and C4d staining)	Х							X ³					
	Renal function panel	Х	Х	Х	Х	Х	Х	X	X	Х	Х	Х	Х	Х
ی ا	CBC with differential	Х	Х	Х	Х	Х	Х	X	X	Х	Х	Х	Х	X
N N	Liver function tests		Х											
ΙĒ	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	Х	Х	Х	Χ	Χ	Χ	Х	Х	Χ	Χ	Х	Х	Χ
/ MONITORING	Donor specific antibody serum level (Hoxworth-HLA lab)	Х				Χ		Х	X ⁴	Χ	Х	Х	Х	Χ
	Urine protein/creatinine ratio	Х							X ⁴	Χ	Х	Х	Х	Χ
LAB	HBsAg and HBcAb (place orders as STAT)	X ⁵												
-	lgG	X ⁶												
	CD19 count (Transplant Monitor Panel)	X ⁷												

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

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

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

⁷If patient has previously received rituximab

	LATE Antibody-Mediated Rejection (AMR) Treatment Calendar (≥ 6 mo	nths po	st-tran	splant)	- 2 CYC	CLES			Heigh	nt (cm):			BS	A (m²):					
	NAME:				MRN:					ht (kg):				Date:					
	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
	PLASMAPHERESIS 1.5 PV ^{1,2}		Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х				
_	Acetaminophen 650 mg PO X 1 (administer 30 minutes prior to rituximab therapy)		Х																
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TREATMENT	RITUXIMAB 375 mg/m² IV (calculated rituximab dose, mg)		Х																
F	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/m² IV push over 3-5 seconds (calculated bortezomib dose, mg)		Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х				
PRN	Ondansetron 4 mg PO/IVP Q8 hrs PRN, for nausea/vomiting		Х	Χ	Х	Х	Χ	Х		Χ	Χ	Х	Х	Χ	Х				
4	Loperamide 2 mg PO Q2 hrs PRN, for loose stools (max: 24 mg per day)		Χ	Χ	Х	Χ	Χ	X		X	Χ	Х	Х	Χ	Χ				
PR	Allograft biopsy (send all biopsies for light microscopy, electon microscopy and C4d staining)	Х								X ³						X ³			
	Renal function panel	Х	Х	Χ	Х	Х	Х	Х		X	Χ	Х	Х	Χ	Х	X	Х	Х	Х
(1)	CBC with differential	Х	Х	X	Х	Х	Х	X		X	X	Х	Х	Χ	X	X	Х	Х	Х
ĭ	Liver function tests		Х							Х									
Ğ	Tacrolimus serum level (or other therapeutic drug monitoring, as applicable)	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
NO	Donor specific antibody serum level (Hoxworth-HLA lab)	Х				Х		Х		X ⁴					Х	Х	Х	Х	Х
LAB / MONITORING	Urine protein/creatinine ratio	Х								X ⁴						Х	Х	Х	Х
AB.	HBsAg and HBcAb (place orders as STAT)	X ⁵																	
_	InG.	∨6																	

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			CD19 ≤ 15	CD19 > 15	ueaunent
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