Canterbury District Health Board
Te Poari Hauora o Waitaha
Haematology

Non Hodgkin Lymphoma - Burkitt-type or
Acute Lymphoblastic Lymphoma
(R) – Methotrexate Cytarabine

Alternates with (R) - Hyper-CVAD

Height	cm
Weight	kg
BSA	m^2
Infusion rate 125 x BSA	= mL/hr

Cycle length:	21 days
Cycle no:	2 4 6 8
Destination:	BMTU

CBC	**Day 1**	**Limits**
Date		
WCC		> 3 x 10^9/L
Plts		> 60 x 10^9/L

References:1. Thomas et al Cancer, 2006 106(7) 1569-1580 (Burkitt - type)
2. Kantarjian, H.D. et al Cancer, 2004 101(12) 2788-2801 (ALL)

Allergies/hypersensitivities

Antiemetics
Domperidone 10 mg PO QID PRN
± Cyclizine 25 mg – 50 mg PO/IV TDS PRN

Agent	**Round**
Rituximab	50mg
Methotrexate	100mg
Cytarabine	100mg
Folinic acid	oral 7.5mg, IV 5mg

DOSE MODIFIED: **NO YES**

Day	Date	Time	Agent	Dose		Route	Instructions	Rate	Doctor	Nurse	Check	Start	Stop
-1			**Methotrexate 12 mg IT**			See separate intrathecal chemotherapy medication chart (C160016)							
-1		2200	Ural Sachet®	1		PO	Dissolved in 20 mL water						
		2200	1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above						
1			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above						
			Dexamethasone	8	mg	PO	Give 1 hour prior to chemotherapy						
			Ondansetron	8	mg	PO/IV	Give 1 hour prior to chemotherapy						

- **If treating ALL,** please prescribe methylprednisolone 50 mg in 100 mL sodium chloride over 15 minutes BD days 1-3 on MedChart, as per reference 2.
- Measure serum creatinine and calculate CrCl one week prior to methotrexate infusion. If CrCl is < 80 mL/min adjust methotrexate as per appendix 15 of the UKALL14 protocol.
- IV fluids run concurrently with chemotherapy. Check fluid balance at least 4 hourly, consider frusemide if urine output falls below 400 mL/m^2 in any 4 hour period, or 1 kg weight increase.
- Urine pH must be > 7.5 before starting methotrexate - adjust sodium bicarbonate to keep pH between 7 and 8 during infusion and subsequent folinic acid rescue.
- Stop proton pump inhibitors (omeprazole/lansoprazole/pantoprazole) the day prior to methotrexate infusion, restart once methotrexate has cleared.
- CNS prophylaxis is given with each cycle up to a total of 16 treatments. If CNS disease, IT therapy is given twice weekly until CSF cell count normalised and cytology negative.
- **Acetazolamide 250mg PO QID, starting the night before methotrexate, and continued until methotrexate cleared, can alkalinise the urine and enhance methotrexate excretion–chart on MedChart.**

Consultant: **Special Authority: Rituximab**

NZMC Reg. No: **Filgrastim:**

Non Hodgkin Lymphoma - Burkitt-type or **Acute Lymphoblastic Lymphoma** **(R) – Methotrexate Cytarabine** ***Alternates with (R) - Hyper-CVAD***	

Height	cm
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Infusion rate 125 x BSA	= mL/hr

Day	Date	Time	Agent	Dose	Route	Instructions	Rate	Doctor	Nurse	Check	Start	Stop
1			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
		T = 0 hrs	**Methotrexate 200 mg/m^2**	mg	IV	In 250 mL sodium chloride 0.9 % over 2 hours	125 mL/hr					
		T = +2 hrs	**Methotrexate 800 mg/m^2**	mg	IV	In 1000 mL sodium chloride 0.9 % over 22 hours	46 mL/hr (rate incl 50mL flush)					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
		2000	Ondansetron	8 mg	PO/IV							
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
2			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above						
		0800	Ondansetron	8 mg	PO/IV							
		T = +24 hrs	**Stop Methotrexate infusion**									
		T = +24 hrs	**Methotrexate level = ________** micromol/L			If ≥20 micromol/L then reduce cytarabine dose to 1 g/m^2, and increase folinic acid to 50mg IV Q6H until the level is <0.1 micromol/L. Notify lab if methotrexate levels required over a weekend.						

- **Ensure prednisolone 1% eye drops - 1 drop in each eye TDS on days 2-8 are prescribed on MedChart**

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Weight	kg
BSA	m^2
Infusion rate 125 X BSA	= mL/hr

Ensure Hep B serology is performed before rituximab treatment ☐

Day	Date	Time	Agent	Dose		Route	Instructions	Rate	Doctor	Nurse	Check	Start	Stop
2			*# Methylprednisolone	100	mg	IV	In 100 mL sodium chloride 0.9% over 15 minutes						
			# Paracetamol	1000	mg	PO	30-60 minutes prior to rituximab						
			# Loratadine	20	mg	PO	30-60 minutes prior to rituximab						
			#Rituximab 375 mg/m² ***(cycles 2 and 4 only)***		mg	IV	☐ **Standard infusion:** added to 500 mL sodium chloride 0.9 % ☐ **Rapid infusion:** added to 500 mL sodium chloride 0.9 %						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above						
		2000	Ondansetron	8	mg	PO/IV							
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above						
		T = +36hrs	**Folinic acid**	50	mg	IV	Slow bolus 36 hrs after start of MTX						
		2100	***Cytarabine** (q12h) **1000 mg/m² or 3000 mg/m²**		mg	IV	In 500 mL sodium chloride 0.9 % over 2 hours						

- **# Rituximab is given in cycles 2 and 4 only. See rituximab recording chart page 8.**
- *** If no reaction to the first dose of rituximab, methylprednisolone can be omitted at the prescriber's discretion.**
- *** Reduce cytarabine dose to 1000 mg/m² for patients ≥ 60 years, or if methotrexate level ≥ 20 micromol/L at end of methotrexate infusion, or if creatinine ≥ 132 micromol/L.**
- **Ensure prednisolone 1% eye drops - 1 drop in each eye TDS on days 2-8 are prescribed on MedChart.**

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Infusion rate 125 X BSA	= mL/hr

Day	Date	Time	Agent	Dose	Route	Instructions	Doctor	Nurse	Check	Start	Stop
3			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above					
		T = +42hrs	**Folinic acid**	15 mg	IV						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above					
		0800	Dexamethasone	8 mg	PO	Give 1 hour prior to chemotherapy					
		0800	Ondansetron	8 mg	PO/IV	Give 1 hour prior to chemotherapy					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above					
		T = +48hrs	**Methotrexate level = _______** micromol/L			If ≥ 1 micromol/L increase folinic acid to 50mg IV Q6H until the level is < 0.1micromol/L. Notify lab if methotrexate levels required over a weekend.					
		T = +48hrs	**Folinic acid**	15 mg	IV						
		0900	***Cytarabine** (q12h) **1000 mg/m^2 or 3000 mg/m^2**	mg	IV	In 500 mL sodium chloride 0.9 % over 2 hours					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above					
		T = +54hrs	**Folinic acid**	15 mg	IV						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate		IV	Infuse at 125 mL/m^2/hour as above					
		2000	Ondansetron	8 mg	PO/IV	Give 1 hour prior to chemotherapy					

- **Reduce cytarabine dose to 1000 mg/m^2 for patients ≥ 60 years, or if methotrexate level ≥ 20 micromol/L at end of methotrexate infusion, or if creatinine ≥ 132 micromol/L**
- **Ensure prednisolone 1% eye drops - 1 drop in each eye TDS on days 2-8 are prescribed on MedChart.**

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Height	cm
Weight	kg
BSA	m^2
Infusion rate 125 X BSA	= mL/hr

Day	Date	Time	Agent	Dose		Route	Instructions	Doctor	Nurse	Check	Start	Stop
3		T = +60hrs	**Folinic acid**	15	mg	IV						
		2100	***Cytarabine** (q12h) **1000 mg/m² or 3000 mg/m²**		mg	IV	In 500 mL sodium chloride 0.9 % over 2 hours					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above					
4			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above					
		T = +66hrs	**Folinic acid**	15	mg	IV						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above					
		0800	Dexamethasone	8	mg	PO	Give 1 hour prior to chemotherapy					
		0800	Ondansetron	8	mg	PO/IV	Give 1 hour prior to chemotherapy					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m²/hour as above					
		T = +72hrs	**Methotrexate level = ________** micromol/L				Aim < 0.1 micromol/L. If ≥ 0.1 micromol/L increase folinic acid to 50mg IV Q6H until the level is < 0.1 micromol/L. Notify lab if methotrexate levels required over a weekend..					
		T = +72hrs	**Folinic acid**	15	mg	PO	IV if PO not tolerated					
		0900	***Cytarabine** (q12h) **1000 mg/m² or 3000 mg/m²**		mg	IV	In 500 mL sodium chloride 0.9 % over 2 hours					

- **Reduce cytarabine dose to 1000 mg/m² for patients ≥ 60 years, or if methotrexate level ≥ 20 micromol/L at end of methotrexate infusion, or if creatinine ≥ 132 micromol/L**
- **Ensure prednisolone 1% eye drops - 1 drop in each eye TDS on days 2-8 are prescribed on MedChart.**

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BSA		m^2
Infusion rate 125 X BSA	=	mL/hr

Day	Date	Time	Agent	Dose		Route	Instructions	Doctor	Nurse	Check	Start	Stop
4			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above					
		T = +78hrs	**Folinic acid**	15	mg	PO	IV if PO not tolerated					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above					
		2000	Ondansetron	8	mg	PO/IV						
		T = +84hrs	**Folinic acid**	15	mg	PO	IV if PO not tolerated					
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above					
5			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above					
		0800	Dexamethasone	8	mg	PO						
		0800	Ondansetron	8	mg	PO/IV						
			1000 mL glucose 4 % & sodium chloride 0.18 % + 20 mmol potassium chloride + 50 mmol sodium bicarbonate			IV	Infuse at 125 mL/m^2/hour as above					
		1700	**Filgrastim 5 mcg/kg** *(round to syringe size 300 mcg or 480 mcg)*		mcg	subcut	Once daily subcutaneously, commence at least 24 hours post chemotherapy. *Prescribe on an outpatient prescription. Special authority required.*					

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Infusion rate 125 X BSA	= mL/hr

Day	Date	Time	Agent	Dose		Route	Instructions	Doctor	Nurse	Check	Start	Stop
8			**Cytarabine 100 mg IT**			IT	See separate intrathecal chemotherapy medication chart (C160016)					
8			*# Methylprednisolone	100	mg	IV	In 100 mL sodium chloride 0.9% over 15 minutes					
			# Paracetamol	1000	mg	PO	30-60 minutes prior to rituximab					
			# Loratadine	20	mg	PO	30-60 minutes prior to rituximab					
			# Rituximab 375 mg/m^2 ***(cycles 2 and 4 only)***		mg	IV	☐ **Standard infusion:** added to 500 mL sodium chloride 0.9 % ☐ **Rapid infusion:** added to 500 mL sodium chloride 0.9 %					

- # Rituximab is given in cycles 2 and 4 only. See rituximab recording chart page 9.
- * If no reaction to the first dose of rituximab, methylprednisolone can be omitted at the prescriber's discretion.

Commence next cycle on day 21 or when WCC is greater than or equal to 3 x 10^9/L and platelets are greater than 60 x 10^9/L, whichever is earlier (at least 14 days apart)

Rituximab 375 mg/m^2 administration instructions	
Date:	***Attach patient label***
Standard infusion:	Commence infusion at 50 mg/hr for the first hour. If no side effects, increase the infusion rate in 50 mg increments every 30 minutes to a maximum rate of 400 mg/hr. Remember that the IV line will have been primed with sodium chloride therefore rituximab will not be infused immediately. To calculate 50mg in _____mL Total volume of bag / Total dose in bag X 50 mg = _____mL
Rapid infusion:	If no previous toxicities, give 20% of the dose over 30 minutes and the remaining 80% over the following 60 minutes
If any adverse effects noted:	Discontinue infusion, evaluate severity of symptoms, and treat accordingly. If reactions settle, recommence at HALF the previous rate. Consider hydrocortisone 100 mg IV if required, plus chlorphenamine and paracetamol (depending on time interval).
Take vital observations as for blood products or as clinically indicated *during infusion*. **Following infusion:** Observe for 1 hour following first infusion for delayed reaction. If patient has reacted to first infusion they will need to be observed for 1 hour following subsequent infusions also.	

Note: •Monitor patients with high tumour burden for infusion related reactions and tumour lysis syndrome.
•Ensure adequate hydration and consider addition of allopurinol for 1 – 3 courses.

PRN medications for hypersensitivity reactions

Date	Time	Medication	Dose	Route	Doctor	Nurse	Check
		Hydrocortisone	100 mg	Slow IV bolus			
		Paracetamol	1000 mg	PO (If more than 4 hours since last dose)			
		Chlorphenamine	10 mg	Slow IV bolus			

PRN antiemetics

Date	Medication	Dose	Directions	Doctor	Nurse sign			
	Domperidone	10 mg	PO QID PRN					
	Cyclizine	50 mg	PO/IV Q8H PRN					
	Lorazepam	0.5-1 mg	PO BD PRN					

Rituximab 375 mg/m^2 administration instructions	
Date:	***Attach patient label***
Standard infusion:	Commence infusion at 50 mg/hr for the first hour. If no side effects, increase the infusion rate in 50 mg increments every 30 minutes to a maximum rate of 400 mg/hr. Remember that the IV line will have been primed with sodium chloride therefore rituximab will not be infused immediately. To calculate 50mg in _____mL Total volume of bag / Total dose in bag X 50 mg = _____mL
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PRN antiemetics

Date	Medication	Dose	Directions	Doctor	Nurse sign			
	Domperidone	10 mg	PO QID PRN					
	Cyclizine	50 mg	PO/IV Q8H PRN					
	Lorazepam	0.5-1 mg	PO BD PRN					