



Bidirectional Glenn

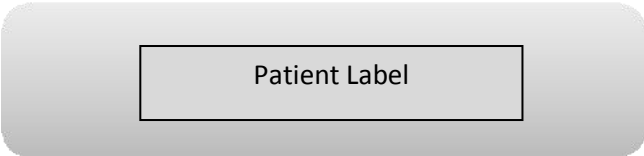
Cardiac Clinical Pathway

(Expected post-operative length of stay 10 days)

- Pathway Goals of Care**
- Early extubation
 - Drain removal
 - Adequate analgesia
 - Early mobilisation

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> Bidirectional Glenn repairs Less than 2 years 	<ul style="list-style-type: none"> Late Bidirectional Glenn repair for tricuspid valve stenosis or Hypoplastic right heart 1 ½ ventricle repair
Pathway Instructions	
Pathway	<ul style="list-style-type: none"> Keep the pathway in the front of the clinical notes (observation chart folder on 23B) at all times Handover the pathway between shifts to ensure everyone is following it Discuss the pathway at ward rounds Complete the pathway each day and place a V or x or N/A in the <input type="checkbox"/> to confirm if a clinical care goal has been achieved If the PICU post-operative course has been longer than expected, continue to refer to the pathway as a guide for post-op care on transfer back to ward 23b.

Ensure routine nursing cares such as the admission checklist, wound care, hygiene (including bowel care), mobilisation and pressure injury care are maintained, as well family/whānau education and orientation to the ward/unit environment.



Patient Label

Instructions: place a v or x or N/A in the to confirm if a clinical care goal has been achieved (v) or not (x) each day, or N/A if not applicable.

Action:	Date:	Location:	AM/PM/Ne			
Pre-operative Management:	<ul style="list-style-type: none"> Interpreter organised if required (<i>arrange pre-admission if able</i>). Medications reviewed and withheld as per the 'Cardiac Surgery –admission process guideline'. Check the consent form has been completed – inform CCN/coordinator if this has not been completed by 5pm. NBM as per Starship fasting guideline. Admitting doctor has completed the 'Pre-op Cardiac Surgical Checklist'. Complete pre-operative paperwork. Complete the 'Ward 23b Admission and Discharge Checklist' (including the anti-staph bundle). 		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pre-Op Surgical Planner for PCCS - Pre-admission notes:
Clinical Management:	<ul style="list-style-type: none"> Does patient have any of the following <ul style="list-style-type: none"> Temp > 37.5°C Signs of chest infection Infected skin lesions Vomiting /diarrhoea for the last 24 hours Infectious contact. i.e. chicken pox, measles 		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> If yes to any of the above contact the surgical fellow/registrar to review the patient Surgery Deferred? Yes / No (circle)
Comments:						

Post-operative PICU Cares – Bi-Directional Glenn

Day 0 PICU until day of transfer

Date: _____

PICU Day 0 Post-op until transfer to ward 23b:

On return to PICU post-operatively follow standard PICU Clinical guidelines for care.

In addition consider the following goals (achieved v/ not achieved x) until transfer to the ward occurs:

	Goal: Post-Op Day	v/x	AM/PM/Ne
Diagnostic Tests			
Routine bloods.	0+		
ECG.	1		
CXR (on return from OT and post pleural drain removal, or if clinically indicated).	0+		
<i>*Avoid IV albumin as it increases pleural drainage.</i>			
Airway			
Extubate as per the EXACT Protocol.	0		
Continue O ₂ at a minimum of 0.5lpm until post-op day 4.	0-4		
Drains			
Remove the mediastinal drain.	1		
Split pleural drains (Keep suction on at least 1kPa for Redax drains).	1		
Remove pleural drains as instructed by the surgical team.	1+		
Medications			
Inotropes as per the PICU medical team – <i>consider commencing milrinone if: BP stable, off all vasodilators and not requiring any dopamine or noradrenaline.</i>	0-1		
Cephazolin – 2 doses post-op.	0+		

Diuretics: frusemide 12 IV hourly and potassium sparing diuretic once daily.	1+		
Commence low dose heparin (stop once CVL removed as per the <i>Low Dose Heparin</i> guideline).	0-1		
Commence aspirin.	1		
6 hourly paracetamol and 8 hourly ibuprofen (+morphine infusion as prescribed).	0+		
Input			
50% (max 50mls/kg/day) fluid allowance (<i>if PICU course exceeds day 1 post-op titrate up as directed – see transfer to ward page for guidance</i>).	0		
Offer small amounts of feed	0+		
Handling			
Nurse 30 degrees post extubation to aid venous drainage.	0+		
Comments:			

Transfer to Ward 23b (Goal Post-op day 1) Date: _____

On the day of transfer to ward 23b ensure the following :	√/x AM/PM/Ne		
Diagnostic Tests/Education			
Routine bloods*. ECG prior to ward round. Chest x-ray if clinically indicated.			
*If the serum albumin is less than 25 g/L consider methods to increase dietary protein intake. *Avoid IV albumin as it increases pleural drainage.			
Invasive Lines/Equipment			
Remove: Arterial line Urinary catheter Central line (once milrinone has been discontinued). Leave x1 peripheral IV access available for ward 23b.			
Airway			
Continue O ₂ at a minimum of 0.5LPM whilst drains in situ or until post-op day 4. Oxygen <u>should be</u> removed when the child is being bathed, playing or mobilising unless clinically contraindicated and can be discontinued at the discretion of the medical team.			
Chest drains			
Remove pleural drains if losses are less than 4mls/kg/drain/day for 2 consecutive days, no bubbling and as instructed by the surgical team. If drains remain in on transfer to ward 23b: suction is continued on 1kPa for any remaining Redax drains; ensure drain is well secured to the patient			
Medications			
Stop low dose heparin 2 hours prior to CVL removal. Diuretics: frusemide 12 IV hourly and potassium sparing diuretic once daily. Continue aspirin.			

Continue 6 hourly paracetamol and 8 hourly ibuprofen. Give oral dose of PRN morphine after discontinuing morphine infusion.			
Fluids			
70%(max 70mls/kg/day) fluid allowance (including feeds).			
Nutrition			
Support oral/enteral feeding. Weigh before discharge.			
Other			
PICU Nursing Discharge (CR9200) completed.			
Comments:			

Goals Post-op Day 2 – Ward 23b

Date: _____

Goals Post-op Day 2 – Ward 23b

Instructions: place a \checkmark or x or N/A in the column to confirm if a clinical goal has been achieved (\checkmark) or not (x) each day, or N/A if not applicable.			
Diagnostic Tests/Education	✓/x AM/PM/Ne		
Repeat FBC/U+E's* if abnormal. Repeat FBC if platelets <100 E+9/L (pre POD3 pacing wire removal check) CXR post pleural drain removal (if drains meet criteria). *If the serum albumin is less than 25 g/L consider methods to increase dietary protein intake. *Avoid IV albumin as it increases pleural drainage.			
Invasive Lines/Equipment			
x1 Peripheral IV in situ.			
Airway			
Continue O ₂ at a minimum of 0.5LPM whilst drains in situ or until post-op day 4. Oxygen should be removed when the child is being bathed, playing or mobilising unless clinically contraindicated and can be discontinued at the discretion of the medical team.			
Monitoring			
Discontinue telemetry if the child is: -Alert -Electrolytes within normal limits -Sinus rhythm for the last 24hours -Clinically stable. Continue pulse oximetry monitoring.			
Chest Drains			
Remove pleural drains if losses are less than 4mls/kg/drain/day for 2 consecutive days, no bubbling and as instructed by the surgical team. • Suction is continued on 1kPa for any remaining Redax drains; ensure drain is well secured to the patient			

Medications	✓/x AM/PM/Ne		
Transition to oral frusemide 12 hourly*. Continue Potassium sparing diuretic once daily. Continue aspirin. 6 hourly paracetamol. 8 hourly ibuprofen. PRN oral morphine. Commence laxatives if bowels have not opened by day 2 post-op. *Continue with BD IV diuretics or consider TDS diuretics if: evidence of fluid overload, weight is NOT tracking back towards pre-op weight			
Fluids			
70mls/kg/day fluid allowance (including feeds). Daily weight.			
Nutrition			
Support solids as per normal home diet. • Leave NGT until child is taking full oral feeds, breast or bottle. • Leave NGT in situ if the child is NOT tolerating oral medication. • Refer to dietitian for consideration of higher protein intake if required.			
Wounds			
Wound review with the surgical team.			
Mobilisation/Handling			
Nurse 30 degrees head up to aid venous drainage. Up to caregivers lap for feeding. Out of bed and encourage normal developmental play. Daily wash with assistance provided to parents for all cares as needed.			
Comments:			

Goals Post-op Day 3 – Ward 23b

Date: _____

Goals Post-op Day 3 – Ward 23b

Instructions: place a \checkmark or x or N/A in the column to confirm if a clinical goal has been achieved (\checkmark) or not (x) each day, or N/A if not applicable.			
Diagnostic Tests/Education	v/x AM/PM/Ne		
Bloods as clinically indicated (U+Es* if on diuretics, coags if indicated). CXR post pleural drain removal (if applicable) or as indicated. ECHO prior to discharge. Commence discharge education. *If the serum albumin is less than 25 g/L consider methods to increase dietary protein intake. *Avoid IV albumin as it increases pleural drainage.			
Invasive Lines/Equipment			
Remove pacing wires. Remove remaining peripheral IV 4 hours post pacing wire removal.			
Airway			
Continue O ₂ at a minimum of 0.5LPM whilst drains in situ or until post-op day 4. Oxygen should be removed when the child is being bathed, playing or mobilising unless clinically contraindicated and can be discontinued at the discretion of the medical team.			
Monitoring			
Discontinue monitoring 2 hours post wire removal.			
Chest Drains			
Remove pleural drains if losses are less than 4mls/kg/drain/day for 2 consecutive days, no bubbling and as instructed by the surgical team. <ul style="list-style-type: none"> Suction is continued on 1kPa for any remaining Redax drains; ensure drain is well secured to the patient 			
Comments:			

Medications	v/x AM/PM/Ne		
Continue oral* frusemide 12 hourly. Continue potassium sparing diuretic once daily. Continue aspirin. 6 hourly paracetamol. PRN ibuprofen. PRN oral morphine. *consider TDS oral frusemide if: evidence of fluid overload, weight is NOT tracking back towards pre-op weight			
Fluids			
*90mls/kg/day fluid allowance (including feeds). Daily weight. *Consider a tighter fluid restriction if weight remains 5% above pre-op weight and drains remain in situ. Liberalise if stable and progressing well.			
Nutrition			
Solids as per normal home diet. <ul style="list-style-type: none"> Leave NGT until child is taking full oral feeds, breast or bottle. Leave NGT in situ if the child is NOT tolerating oral medication. Refer to dietitian for consideration of higher protein intake if required. 			
Wounds			
Review all wounds.			
Mobilisation/Handling			
Up to caregivers lap for feeding. Support as much normal developmental play as possible. Daily wash with assistance provided to parents for all cares as needed.			
Comments:			

Goals Post-op Days 4 to discharge – Ward 23b

Date: _____

Instructions: place a v or x or N/A in the column to confirm if a clinical goal has been achieved (v) or not (x) each day, or N/A if not applicable.			
Diagnostic Tests/Education	v/x AM/PM/Ne		
<p>Bloods as clinically indicated (U+Es* if on diuretics, coags if indicated).</p> <p>*If the serum albumin is less than 25 g/L consider methods to increase dietary protein intake.</p> <p>*Avoid IV albumin as it increases pleural drainage.</p> <p>CXR post pleural drain removal (if applicable) or as indicated ECHO prior to discharge. Continue discharge education.</p> <ul style="list-style-type: none"> Consider repeating CXR if abnormalities are present on post-op CXR, consider PA and lateral views. Ensure a post-op extubated CXR is done prior to discharge. 			
Invasive Lines/Equipment			
n/a			
Airway			
Discontinue O ₂ on post-op day 4 if not clinically required.			
Monitoring			
n/a			
Chest Drains			
<p>Remove pleural drains if losses are less than 4mls/kg/drain/day for 2 consecutive days, no bubbling and as instructed by the surgical team.</p> <p>Date pleural drains removed: L_____ R_____</p> <ul style="list-style-type: none"> Suction is continued on 1kPa for any remaining Redax drains; ensure drain is well secured to the patient 			

Goals Post-op Days 4 to discharge – Ward 23b

Medications	v/x AM/PM/Ne		
<p>Continue oral* frusemide 12 hourly. Continue potassium sparing diuretic once daily. Continue aspirin. 6 hourly paracetamol. PRN ibuprofen (discontinue by post-op day 7). Discontinue oral morphine.</p> <p>*consider TDS oral frusemide if: evidence of fluid overload, weight is NOT tracking back towards pre-op weight. Consider reducing if weight less than pre-op or signs of dehydration.</p>			
Fluids			
<p>*100-120mls/kg/day fluid allowance (including feeds) or normal home diet if tolerated. Daily weight.</p> <p>*Consider a tighter fluid restriction if weight remains 5% above pre-op weight and drains remain in situ. Liberalise if stable and progressing well.</p>			
Nutrition			
<p>Support solids as per normal home diet.</p> <ul style="list-style-type: none"> Refer to dietitian for consideration of higher protein intake if required. 			
Date NGT removed: _____			
Wounds			
<p>Review all wounds daily. Wound review with surgical team prior to discharge. Chest drain sutures removed by post-op day 7-10.</p>			
Mobilisation/Handling			
<p>Support as much normal developmental play as possible. Support family to care for the child independently.</p>			
Comments:			

Day of Discharge Ward 23b cares Date: _____

Post Discharge Management

Instructions: place a V or x or N/A in the column to confirm if a clinical goal has been achieved (v) or not (x) each day, or N/A if not applicable.

Discharge criteria	v/x		
	AM	PM	Ne
Tolerating normal home diet. Ward 23b discharge checklist completed. Review medication prior to discharge <ul style="list-style-type: none"> Regular paracetamol on discharge Review the need for diuretics on discharge with the cardiologist. Wound review and removal of chest drain sutures if present arranged for day 7-10 post op. If the sternal wound has interrupted/continuous sutures, removal of sutures is arranged by the surgical team at 14 days. Post-op ECHO completed.			

Discharge Referrals	v/x		
	AM	PM	Ne
Home care nursing referral. Neurodevelopment referral (see 'neurodevelopment follow up of cardiac patients' guideline). Routine check by GP within the first week of discharge.			

Comments:

On-going follow-up	v/x		
	AM	PM	Ne
Refer to the 'Follow up after Cardiac Surgery' guideline. Consider early discharge follow-up in discussion with the cardiologist* (circle the outcome below) . <i>*e.g. to exclude pulmonary effusions</i> Follow-up with (circle): Cardiologist OR Paediatrician In (circle): Early Follow-up (<4 weeks) OR Routine follow-up (approx. 4 weeks)			

Comments: