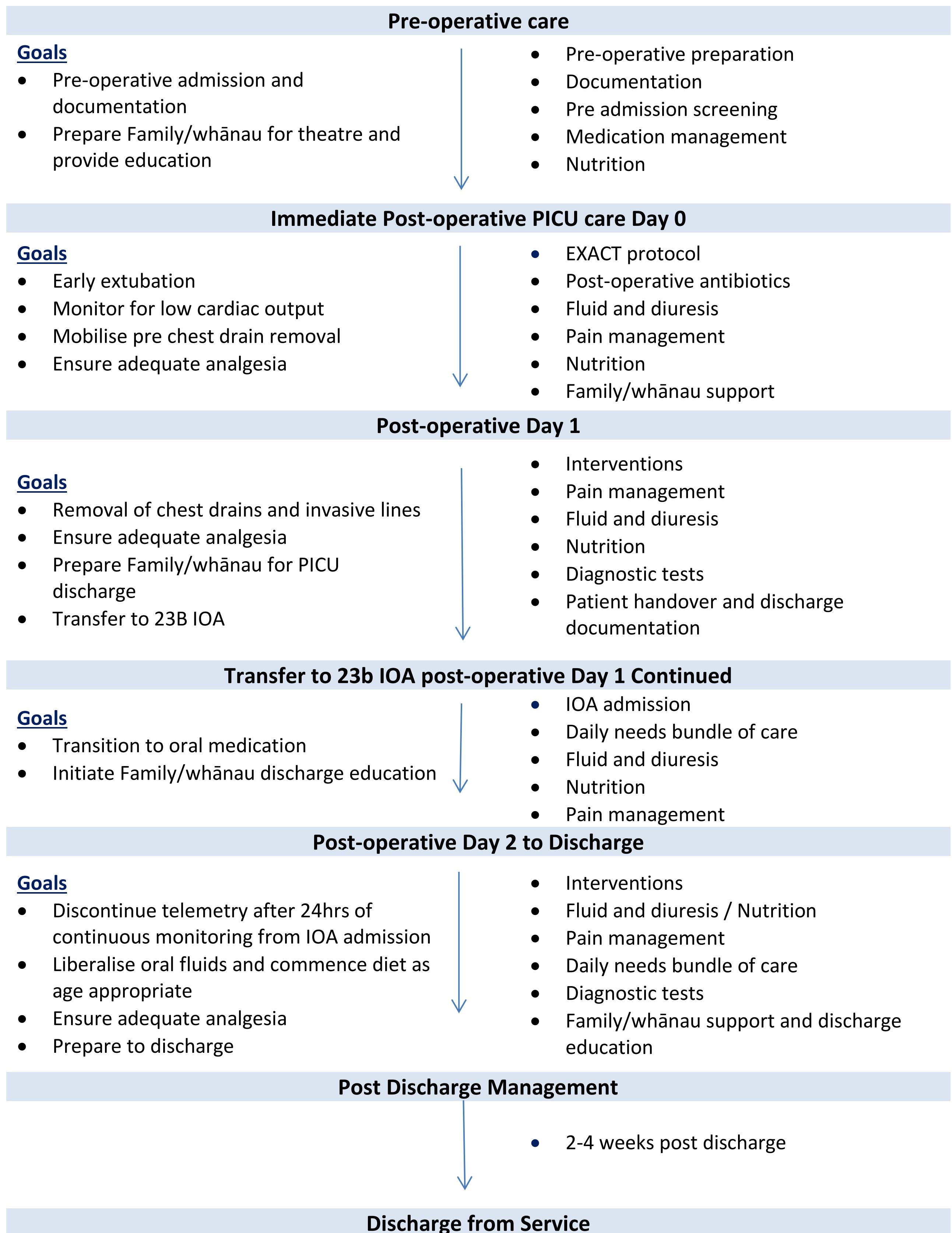
Starship Child Health

Patient label

Biventricular Pathway for infants 6 weeks to 1 year

Expected length of hospital stay 5-6 days



Pre-operative care

Goals
- Pre-operative admission and documentation
- Prepare Family/whānau for theatre and provide education

- Pre-operative preparation
- Documentation
- Pre admission screening
- Medication management
- Nutrition

Immediate Post-operative PICU care Day 0

Goals
- Early extubation
- Monitor for low cardiac output
- Mobilise pre chest drain removal
- Ensure adequate analgesia

- EXACT protocol
- Post-operative antibiotics
- Fluid and diuresis
- Pain management
- Nutrition
- Family/whānau support

Post-operative Day 1

Goals
- Removal of chest drains and invasive lines
- Ensure adequate analgesia
- Prepare Family/whānau for PICU discharge
- Transfer to 23B IOA

- Interventions
- Pain management
- Fluid and diuresis
- Nutrition
- Diagnostic tests
- Patient handover and discharge documentation

Transfer to 23b IOA post-operative Day 1 Continued

Goals
- Transition to oral medication
- Initiate Family/whānau discharge education

- IOA admission
- Daily needs bundle of care
- Fluid and diuresis
- Nutrition
- Pain management

Post-operative Day 2 to Discharge

Goals
- Discontinue telemetry after 24hrs of continuous monitoring from IOA admission
- Liberalise oral fluids and commence diet as age appropriate
- Ensure adequate analgesia
- Prepare to discharge

- Interventions
- Fluid and diuresis / Nutrition
- Pain management
- Daily needs bundle of care
- Diagnostic tests
- Family/whānau support and discharge education

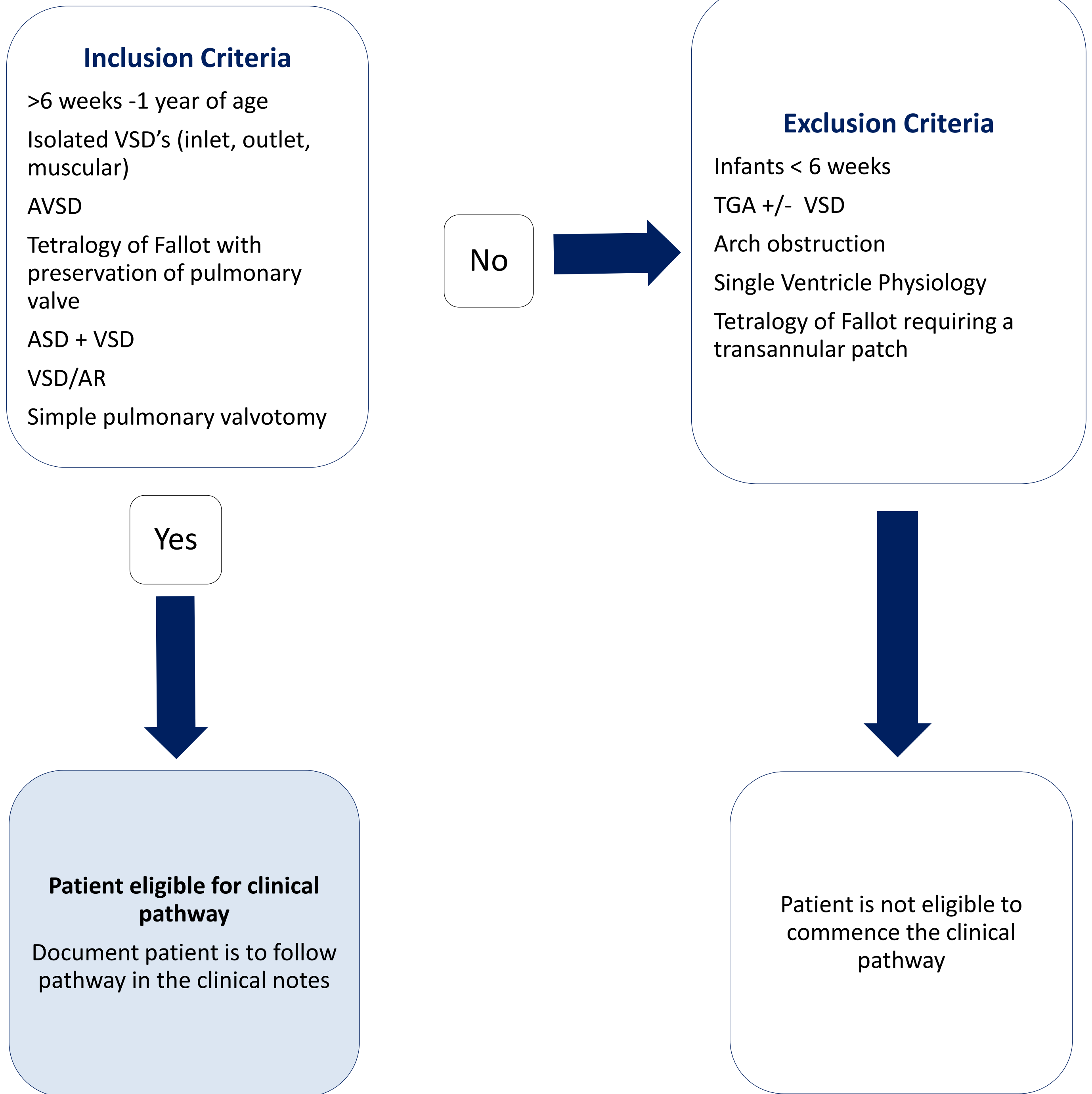
Post Discharge Management

- 2-4 weeks post discharge

Discharge from Service

Patient label

Biventricular Clinical Pathway
Inclusion/exclusion criteria



Variance

- The purpose of the variance record is to track and document variations from the clinical pathway
- Variations and actions need to be recorded on the pathway by either nursing or medical team

Starship Child Health

Patient label

Pre-operative care 23B

Goals

Complete pre-operative admission and documentation
Prepare Family/whānau for theatre and provide education

	Date
Pre–operative preparation	○ Medical admission (see cardiac surgery admission guideline) ○ Ages and Stages questionnaire ○ Resus chart ○ Shower and chlorhexidine wipe the night prior to surgery and the morning of surgery ○ Organise interpreter for consent if required ○ Ward leave form to be completed if patient is suitable for Ronald McDonald house overnight
Documentation	○ Admission to discharge planner ○ Pre-op checklist (see cardiac surgery admission checklist) ○ Consent - If not completed by 5pm, Clinical Charge Nurse or shift coordinator to follow up
Preadmission screening	○ AVSD – Chromosomal screening for T21 performed ○ Tetralogy of Fallot – 22q deletion screen with further testing if positive ○ Overseas patients • MRSA + MSSA screening (nasal and groin swab) • MRO screening (rectal/faeces swab) ○ Patients from other hospitals • MRSA + MSSA screening
Medication management	○ Potassium sparing diuretics - withhold for 24 hours prior to surgery ○ Loop diuretics - withhold morning dose ○ ACE inhibitors - withhold morning dose ○ Beta blockers - morning dose can be given with small sip of water ○ Anti-staph bundle – mupirocin treatment ○ Pre-medication charted
Nutrition	○ Establish NBM times (see anaesthetic fasting guideline and cardiac surgery admission process guideline)

Variance

Does patient have any of the following

- ○ Temp > 37.5
- ○ Signs of chest infection
- ○ Infected skin lesions
- ○ Vomiting /Diarrhoea for the last 24 hours
- ○ Infectious contact. i.e. Chicken pox, measles

Action

- ○ Contact surgical Fellow/Registrar to review patient
- ○ Theatre delayed or cancelled
- ○ Recommence pathway once theatre date is confirmed

Document variance below

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Patient label

Immediate post-operative care Day 0 PICU

Goals

Early extubation
Monitor for low cardiac output
Adequate analgesia

	Date:
EXACT protocol	○ EXACT as per 2 or 6 hour protocol ○ Administer supplemental O2 to maintain Sp02 >93-98% ○ Identify patients suitable for early chest drain removal protocol on 2000hrs ward round ○ Mobilise pre chest drain removal ○ CLAB and Glamorgan
Post-operative antibiotics	○ Cephazolin - 2 doses post-operative
Fluid and diuresis	○ Discontinue IV maintenance fluids post extubation ○ Accurate fluid balance
Nutrition	○ Encourage oral fluids post extubation once cardiorespiratory status stable ○ Liberalise oral fluids if(?) no fluid restriction is required

Pain management	○ Follow PICU unintubated 0-12 months analgesia and sedation algorithm
	○ Q6 hrly paracetamol
	○ Q8 hrly ibuprofen (can be administered on an empty stomach) unless:
	    ○ Patient is < 3mth old
	    ○ Evidence of bleeding
	    ○ Renal impairment is present
	    ○ Patient is receiving captopril
	○ Antiemetic if child has postoperative nausea or vomiting (first line ondansetron)

Family/whānau support	○ Orientate Family/whānau to PICU ○ Surgical education post PICU admission

Variance

- Diversion from the EXACT protocol, child no longer follows the pathway and care is managed as per care of the cardiac child PICU guideline

Action

- Follow care as per care of the cardiac child PICU guideline
- Pain and sedation management as per PICU intubated 0-12months analgesia and sedation algorithm
- Recommence pathway once patient is extubated

Document variance below

Starship Child Health

Patient label

Post-operative Day 1
PICU

Goals

Removal of chest drains and invasive lines
Ensure adequate analgesia
Transfer to 23b IOA

	Date:

Interventions	○ Wean O2 to maintain SpO2 >93-98%
	○ Remove chest drains at 0600 if patient meets early chest drain removal criteria or post-surgical ward round
	○ Mobilise pre chest drain removal
	○ Post ward round remove
	    ○ Central line
	    ○ Arterial Line
	    ○ Foley catheter
	○ Ensure 1x functioning IV cannula remains insitu
	○ Complete CLAB and Glamorgan

Diagnostic tests	○ Chest x-ray post chest drain removal ○ Post-operative ECG prior to surgical ward round

Pain management	○ Follow PICU unintubated 0-12 months analgesia and sedation algorithm
	○ Q6 hrly paracetamol
	○ Q8 hrly ibuprofen unless
	    ○ Patient is < 3mth old
	    ○ Evidence of bleeding
	    ○ Renal impairment is present
	    ○ Patient is receiving captopril
	○ Antiemetic if child has postoperative nausea and vomiting (first line ondansetron)

Nutrition	○ Encourage breast/oral feeding ○ Child is able to upgrade to normal daily intake as tolerated, no fluid restriction is required ○ Remove nasogastric tube if child is tolerating medication and feeding orally
Fluid and diuresis	○ Administer BD IV frusemide 1mg/kg and potassium sparing diuretic at 06:00hrs if K+, Urea and Creatinine are normal ○ Accurate fluid balance
PICU discharge documentation and patient handover	○ Medical team review chest x-ray post drain removal, prior to transfer to 23b ○ Discharge documentation completed including PEWS score, ○ Pain team and PaR team referral if required. ○ Medical staff to call 23b admission phone and verbally handover to Registrar/NP prior to transfer
Family/whānau support	○ Prepare Family/whānau for PICU discharge ○ Family/whānau education

Variance
○ Failure to discharge from PICU due to a change in clinical status
Action
○ Recommence pathway once child's clinical status is stable and ready for transfer to 23b
Document variance below

Patient label

Post-operative Day 1 continued
Ward 23B IOA admission

Goals

Transfer to 23b IOA
Consider transitioning to oral medication
Initiate family/whānau discharge education

	Date:
IOA admission	○ Medical admission, review diagnostics tests ○ Continuous monitoring as per Starship observations and monitoring guideline for 24hrs post IOA admission ○ Wean O2 to maintain SpO2 >93-98%
Daily needs bundle of care	○ Hygiene needs/oral care ○ Glamorgan ○ Mobilise as developmentally appropriate out of bed, sitting up, out for cuddles with Family/whānau

Pain Management	○ Q6 hrly paracetamol
	○ Q8 hrly ibuprofen unless
	    ○ Patient is < 3mth old
	    ○ Evidence of bleeding
	    ○ Renal impairment is present
	    ○ Patient is receiving captopril
	○ PRN Oral Morphine
	○ Antiemetic if child has postoperative nausea and vomiting (first line ondansetron)

Nutrition	○ Encourage normal daily intake as tolerated ○ Encourage breast/oral feeding ○ Remove nasogastric tube if patient is tolerating medication and feeding orally
Fluid Diuresis	○ Continue BD frusemide 1mg/kg and potassium sparing diuretic ○ Consider transitioning to oral diuretics ○ Accurate fluid balance
Family/whānau support	○ Family/whānau education ○ Support family/whānau to participate in child's care

Variance ○ Failure to discharge from PICU due to ward capacity
Action ○ Patient continues on pathway in PHDU and can bypass the IOA if post-op day 1 goals have been achieved
Document variance below

Starship Child Health

Patient label

Post-operative Day 2 to post-operative Day 4
Ward 23B
Aim for discharge postoperative day 3 or 4

Goals

Ensure adequate analgesia
Liberalise oral fluids and encourage normal daily intake as tolerated
Prepare to discharge

	Post op day 2 Date:	Day 3 post op Date:	Day 4 post op Date:
Fluid and Diuresis	○ Transition to oral diuretics BD or daily if • Absorbing feeds • No evidence of CHF • Weight is tracking back towards pre-op weight • No clinical signs of dehydration ○ Daily weight ○ Accurate fluid balance	○ Continue with oral diuretics BD or daily ○ Daily weight	○ Consider reducing or stopping diuretics ○ Daily weight
Nutrition	○ Encourage breast/oral feeding ○ Encourage normal daily intake as tolerated	○ Encourage breast/oral feeding ○ Encourage home diet as age appropriate ○ If oral intake is less that 70ml/kg/day discuss with medical team	○ Encourage breast/oral feeding ○ Encourage home diet as age appropriate
Interventions	○ Check diagnostic tests are completed for removal of pacing wires on day 3 post-op ○ Transfer out of IOA if child is clinically stable and progressing as expected ○ Discontinue telemetry if patient meets the below criteria • Alert • Electrolytes within normal levels • Sinus rhythm for the last 24 hours • Child is clinically stable and progressing as expected ○ Commence lactulose daily if BNO ○ Surgical wound review	○ Remove pacing wires as per pacing wire removal protocol and ○ Discontinue monitoring as per pacing wire removal protocol ○ Remove all dressings on dry wounds ○ Remove peripheral IV 6 hours post pacing wire removal if child is clinically stable ○ Consider discharging in the afternoon if child has progressed well and meets the discharge criteria	○ Discharge if child has progressed well and meets the discharge criteria

Care continues on the next page

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Patient label

	Post op day 2 Date:	Day 3 post op Date:	Day 4 post op Date:
Pain Management	○ Q6 hrly paracetamol ○ Q8 hrly ibuprofen unless • Patient is < 3mth old • Evidence of bleeding • Renal impairment is present • Patient is receiving captopril ○ PRN Oral Morphine ○ Antiemetic if required	○ Continue with regular Q6 hrly paracetamol ○ PRN ibuprofen ○ PRN Oral Morphine ○ Antiemetic if required	○ Continue with regular paracetamol ○ PRN ibuprofen Antiemetic if required
Diagnostic tests	○ U and E's	○ Echocardiogram is required prior to discharge	
Daily needs bundle of care	○ Bath/oral hygiene ○ Support family/whānau to care for child ○ Mobilise as appropriate sitting up, out of bed, cuddles with Family/whānau ○ Encourage normal developmental play activities as tolerated ○ Glamorgan		
Infection surveillance	○ Pyrexia of < 38.5 within 48 hours can commonly be associated with a SIRS response ○ Ensure patient is hydrated and manage with paracetamol ○ See variance recommendations for temperature >38.5		
Parental discharge education	○ Commence discharge education ○ Wound education ○ Medication education ○ Signs of when to seek medical advice		
Discharge criteria	○ Oral feeding has been sufficiently established ○ Patients still requiring diuretics on day of discharge can continue with daily frusemide and potassium sparing diuretic for one week ○ Patients receiving diuretics pre-op can continue with daily frusemide and potassium sparing diuretic for two weeks ○ Discharge to local hospital on day 4 if child is cardiovascularly stable but requires on-going feeding support ○ Review medication prior to discharge ○ Family/whānau discharge education completed		
Discharge referrals	○ Wound review and removal of sutures by the GP on day 7-10 post op ○ If the wound has interrupted sutures, removal of sutures is organised by the surgical team for 14 days post-op ○ Home care nursing referral ○ Neurodevelopment referral (see neurodevelopment follow up of cardiac patients guideline) ○ Routine check by GP within the first week of discharge		

Variance
- Arrhythmias
- On-going oxygen requirement from day 3 post op
- Temperature > 38.5°C

Actions

Arrhythmia	Oxygen	Temperature
○ Consult with Cardiologist ○ Delay pacing wire removal ○ Continue ECG monitoring ○ Check electrolytes	○ Clinical examination ○ Review last chest x-ray ○ Consider fluid overload as cause	○ Clinical examination ○ Check wound ○ Review last CXR ○ FBC/blood cultures ○ MSU sample

<u>Document variance below</u>

Starship
Child Health

Patient label

Post-discharge management

1 week post discharge	
	○ Routine check by GP within the first week of discharge ○ Diuretics to be stopped by GP after 1 week ○ Children receiving diuretics pre-op, continue on daily diuretic management for 2 weeks