

Databases searched:	<input checked="" type="checkbox"/> CINAHL (Ebsco)	<input checked="" type="checkbox"/> Medline (Ebsco)	<input checked="" type="checkbox"/> Pubmed (NLM)	<input type="checkbox"/> Nursing (Ovid)	<input type="checkbox"/> Emcare (Ovid)
Keywords used:	Chylothorax, cardiac, paediatric				
Search limits:	English, full text, human, all child				

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
Ascenzi, J.A (2007). Update on Complications of Pediatric Cardiac Surgery. <i>Critical care nursing clinics of North America</i> . 15 (9), 361 – 369.	I	<p><b>Case study for chylothorax management</b> (6-month-old male post TOF repair):</p> <ul style="list-style-type: none"> <li>• Observation of increased and persistent yellow serosanguinous fluid drainage at a rate of 1-2µL/kg/hr on postoperative day 1. Commenced on clear liquid diet.</li> <li>• On postoperative day 2, diet advanced to include formula and cloudy white drainage noted.</li> <li>• Drain specimen sent for suspected chylothorax. Detection of markedly increased triglycerides, chylothorax confirmed.</li> <li>• Commencement of fat-free formula (Tolorex) &amp; diuretics</li> <li>• Not resolved by day 7, nil by mouth and TPN &amp; lipids</li> <li>• Ocreotide infusion (8µg/kg/hr) commenced for an additional 48 hours</li> <li>• Drains removed on postoperative day 13</li> <li>• Discharged home on postoperative day 16 and continued on the low-fat diet for one week</li> </ul>
Bulut, O et al. (2005). Treatment of chylothorax developed after Congenital Heart Disease surgery: a case report. <i>North Clin Istanbul</i> . 2(3): 227-230.	VI	<p><b>Diagnostic criteria for chylothorax diagnosis:</b></p> <ul style="list-style-type: none"> <li>• Milk-like drainage</li> <li>• Sterile culture</li> <li>• TAG &gt; 110mg/dL</li> <li>• Lymphocytes &gt; 1000cells/µL &amp; ratio &gt; 80%</li> </ul> <p><b>Chylothorax Treatment:</b></p> <ul style="list-style-type: none"> <li>• Drainage of fluid</li> <li>• Cease enteral nutrition</li> <li>• TPN and MCT formula</li> <li>• Surgery (Ligation / pleurodesis)</li> <li>• Ocreotide</li> </ul>

<p>Biewer, E.S et al. (2010). Chylothorax after surgery on congenital heart disease in newborns and infants – Risk factors and efficacy of MCT-diet. <i>Journal of Cardiothoracic Surgery</i>. 5(127), 1-7.</p>	<p>V</p>		<ul style="list-style-type: none"> <li>• Application of MCT diet alone was effective in 71% of patients</li> <li>• More invasive treatments like TPN and lipids should not be used</li> <li>• After resolution of chylothorax, MCT-diet can be converted to regular milk formula within one week and with very low risk of relapse</li> </ul>
<p>Bulut, O et al. (2005). Treatment of chylothorax developed after Congenital Heart Disease surgery: a case report. <i>North Clin Istanbul</i>. 2(3): 227-230.</p>	<p>VI</p>	<p><b>Diagnostic criteria for chylothorax diagnosis:</b></p> <ul style="list-style-type: none"> <li>• Milk-like drainage</li> <li>• Sterile culture</li> <li>• TAG &gt; 110mg/dL</li> <li>• Lymphocytes &gt; 1000cells/<math>\mu</math>L &amp; ratio &gt; 80%</li> </ul> <p><b>Chylothorax Treatment:</b></p> <ul style="list-style-type: none"> <li>• Drainage of fluid</li> <li>• Cease enteral nutrition</li> <li>• TPN and MCT formula</li> <li>• Surgery (Ligation / pleurodesis)</li> <li>• Octreotide</li> </ul>	

Czobor, N.R. et al. (2017). Chylothorax after paediatric cardiac surgery complications. *Journal of thoracic disease*. 9(8), 2466 – 2475.

III

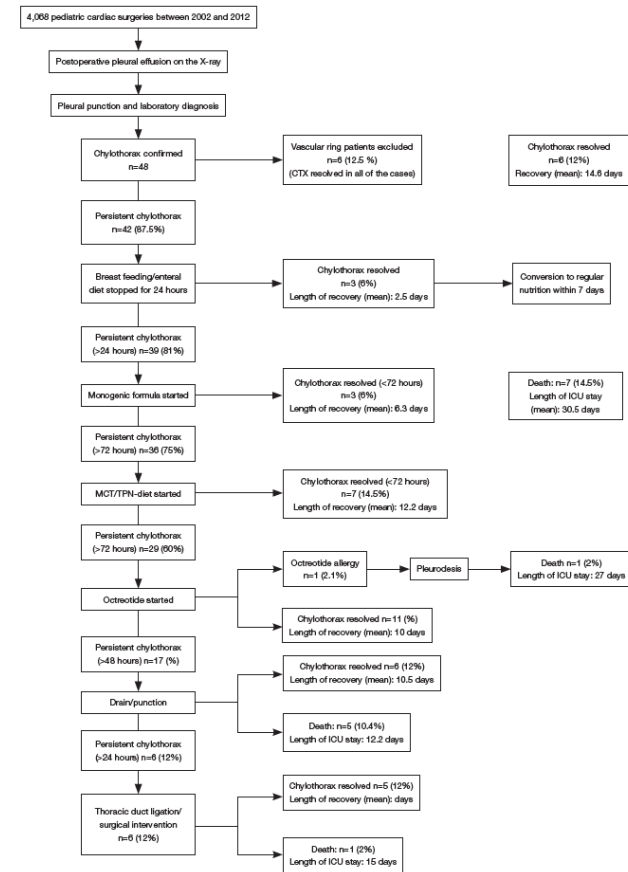
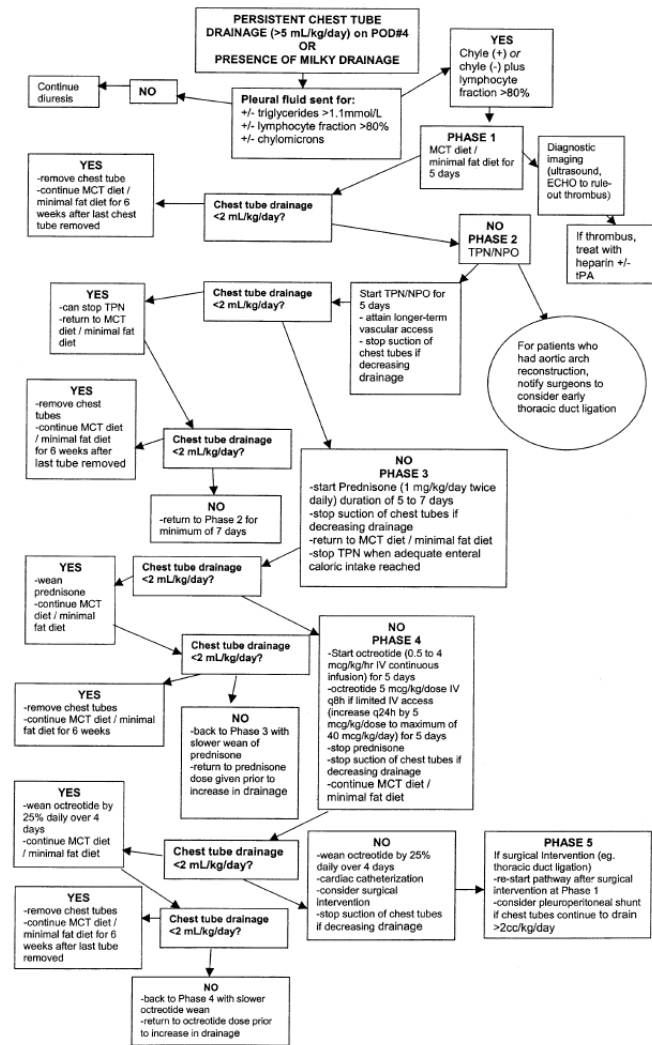


Figure 2 The therapeutic algorithm for the treatment of chylothorax and the length of recovery (days).

- The highest incidence of chylothorax was observed on the second postoperative day
- The occurrence of pulmonary failure was higher in the chylothorax group ( $P = 0.001$ ) and they required longer mechanical ventilation ( $P=0.002$ ) and longer hospitalisation times ( $P=0.001$ ).

Chan, E.H. et al. (2005). Postoperative chylothorax after cardiothoracic surgery in children. *Ann Thorac Surg.* 80: 1864 – 71.

II



Haines, C. et al. (2014). Chylothorax development in infants and children in the UK. *Arch Dis Children.* 99 (11), 724-730.

VI

- The incidence of chylothorax was highest in infants  $\leq 12$  months at 16 per 100 000 (0.016%)
- Most frequently confirmed by laboratory verification of triglyceride count of pleural fluids  $\geq 1.1$ mmol/L
- Treatment with an MCT diet was most commonly reported

Milonakis, M et al. (2009). Etiology and management of chylothorax following paediatric heart surgery. *Journal of Cardiac Surgery*. 24 (8); 369 – 373.

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- 83.3% of patients (n=15) responded to conservative therapy
- Lymph leak ranged from 15 – 47 days

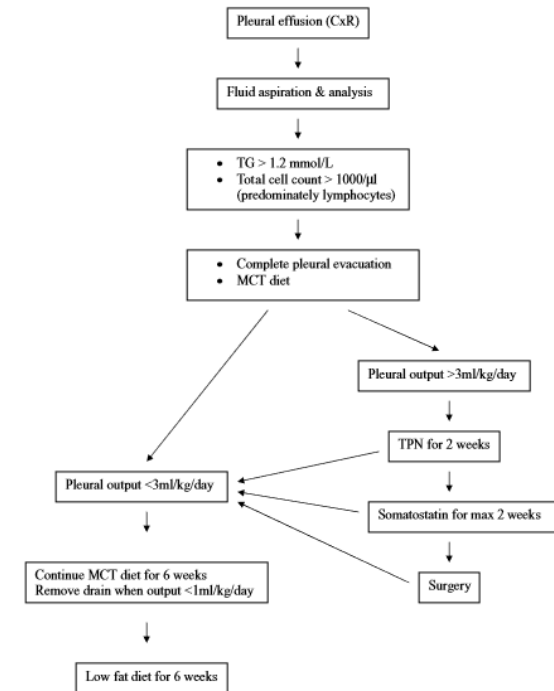


Figure 1. Protocol for postoperative chylothorax treatment.