Lung separation is a common requirement in modern pediatric cardiac and thoracic surgery. The need for single lung ventilation is obvious in surgeries on the aorta (coarctation, anomalous subclavian artery), or the pulmonary artery (PDA ligation, Blalock-Taussig shunts, MAPCA unifocalization). Other intra-thoracic operations may also require lung separation (tracheoesophageal fistula, diaphragmatic hernia, scoliosis surgery). The recent advances in VATS (video-assisted thoracic surgery), allows intra-cardiac operations to be done through small incisions, with the use of lung separation. In addition, medical indications for lung isolation (lung abscesses, hemoptysis, and bronchopleural fistula) may also require lung separation in infants and children.

Lung separation has been done by packing the lungs with gauze, trying to achieve surgical exposure with intermittent ventilation. However this method can cause significant barotrauma, inadequate exposure and poor ventilation/perfusion. Single lung ventilation is ideally achieved by separate lumenal ventilation of the bronchi, using a double lumen tube. This method isolates the lungs, protects against contamination, and allows suction and CPAP application to the unventilated lung. However the limitation for DLT is size, with the smallest 26F tube fit for a 30 kg/12 year old patient. A Univent tube with an attached bronchial-blocker can be used for children 5 years or older, providing adequate lung separation with no need for tube exchange at the end of the procedure. For smaller children, especially infants, the options for lung separation include endobronchial intubation using a cuffed single lumen endotracheal tube, or bronchial separation using a Fogarty catheter, a balloon-tipped pulmonary artery catheter, or an Arndt bronchial blocker.