



## Preface for the special issue “*Mechanical circulatory support for heart and lung failure*”

Current evidence and new standards in mechanical circulatory support for heart and lung failure.

Patients suffering from failing heart and lung function encompass all age categories, are in need for highly complex treatment strategies and are severely threatened by immediate risk for mortality. Underlying causes include a wide variety of conditions, whereas of them are united in limited therapeutic options in end stage disease.

We are not confronted with a seldom patient clientele, rather with a global pandemic. Heart failure alone is affecting 26 million people worldwide. Respiratory failure is not far behind. The WHO states that 1 billion people are affected by acute or chronic respiratory conditions, of which 4 million people die prematurely every year.

Once medical treatment options are exhausted the only opportunity to maintain hemodynamic or respiratory stability, preventing immediate death, is provided by mechanical circulatory support. Rooting in the 1960s, therapeutic circulatory support options have evolved extensively throughout the years.

However, we still face great challenges regarding risk-management, therapeutic strategies and patient selection. Treatment of these high-risk patients often requires a specialized and courageous therapeutic regimen. Specialized centers have compiled valuable experience in treating these highly complex patients. In working together and exchanging experiences, we hope to enable high-level treatment for patients in urgent need of our expertise. This *JTD* special edition was designed to enable a worldwide exchange among leading experts, who share valuable insight into essential questions in this highly discussed and rapidly evolving field. In this special issue we were able to include contributions from leading centers of expertise from various countries and continents.

Major new insight regarding left ventricular assist device (LVAD) therapy is included in this *JTD* special edition. From presentation of a new minimally invasive embolectomy of outflow grafts to insights about the largely discussed topic of tricuspid valve repair during LVAD implantation and the pressing questions of why, when and how to exchange a LVAD, the field is being assessed thoroughly.

Furthermore, the essential role of right heart function during LVAD therapy is focus of interest. In addition to useful and valuable predictors for right heart failure after LVAD implantation, the possibility of temporary right ventricular assist device (RVAD) support is being tackled.

Further emphasis is put on mechanical circulatory support in heart transplant patients with fascinating insights into the role of donor organ perfusion. In lung transplant patients circulatory support during transplantation is assessed as well as bridging therapy options in patients with idiopathic pulmonary arterial hypertension (iPAH). In the rapidly evolving field of extracorporeal membrane oxygenation (ECMO) therapy valuable insight about early mortality in pediatric and neonates is offered.

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