

## CURRICULUM VITAE

**Name:** Marc Roger de Leval

**Date of birth:** 16th April 1941

**Place of birth:** Charneux, Belgium

**Nationality:** Belgian

**GMC Registration no:** 2393911

**Hospital address:** Cardiothoracic Unit  
Great Ormond Street Hospital for Children NHS Trust  
Great Ormond Street  
London WC1N 3JH, UK

**Professional qualifications:** MD  
Fellow of the Royal College of Surgeons (FRCS)  
PhD (Agrégé de l'enseignement supérieur, Belgium, 1978)

### Appointments:

- Professor of Cardiothoracic Surgery, University of London, since October 1998.
- Chair, Cardio-respiratory and Critical Care Division, Great Ormond Street for Children NHS Trust, 2002-5.
- Consultant Cardiothoracic Surgeon, Great Ormond Street Hospital for Children NHS Trust, London, 1974-1998.
- President, British Congenital Cardiac Association, 2002-5
- Visiting Professor, University of Leuven, Belgium, since 1993.

### Education:

#### Medical School

1959 - 1966                      University of Liège, Belgium

### Postgraduate training

1966 - 1970	General surgery	University Hospital of Liège, Belgium
1970 - 1972	Cardiothoracic surgery	Stanford University, San Francisco, California
1972 - 1973	Cardiothoracic Surgery	Hospital for Sick Children, Great Ormond Street, London
1973 - 1974	Cardiothoracic Surgery	Mayo Clinic, Rochester, Minnesota

### **Clinical activities:**

- Surgical management of congenital heart diseases.
  - Contributions to the development of infant and neonatal cardiac surgery in the 1970s.
  - Development of surgical techniques to repair complex cardiac malformations, and in particular single ventricles.
- Creation of the heart and heart-and-lung transplantation programme for children at Great Ormond Street in 1988.

### **Academic activities:**

- Continuous involvement in basic and clinical research projects since 1963.
- Academic Head, Cardiothoracic Unit, Institute of Child Health, University of London, 1991-5.
- Regular faculty member of postgraduate courses in the UK and abroad.
- Regular invited speaker and visiting professor at national and international meetings.
- 314 publications
- 70 book chapters
- Co-author of a book: Surgery for Congenital Heart Defects. J Stark, M de Leval. 1st Edition 1983; 2nd Edition 1994.

**Current research interests:**

- Computational fluid dynamics study of repaired coarctation of the aorta.
- Human factors and outcomes of cardiac surgery.
- Crew resource management (CRM) training for operating theatre teams using the British Airways CRM model.
- Handovers from operating theatre teams to ICU using the analogy of the Formula 1 pitstop.
- Biochemical and pharmacologic characterisation of vasoactive factors regulating the lymphatic system.

**Prizes, Scholarships, Professorships:**

- First “Specia” Prize, Belgium, 1966
- Laureate of the “Concours de Bourse de Voyage”, Belgium, 1967
- Evarts Graham Travelling Fellowship of the American Association for Thoracic Surgery, 1973-1974.
- Prize of the Belgian Surgical Society, 1974.
- Upjohn Professor of Surgery, University of Leuven, Belgium, 1992-1993.
- Knight of the Order of the Falcon conferred by the President of the Republic of Iceland in recognition for services, 1991.
- Christophe Plantin Prize, Belgium, 1994.

**Learned societies**

Member of the International Cardiovascular Society

Associate Member of the American Society for Artificial Internal Organs

Member of the International Society of Thrombosis and Haemostasis

Correspondent Member of the Belgian Society of Surgery

Member of the British Cardiac Society

Member of the British Association of Paediatric Surgeons

Member of the Society of Thoracic and Cardiovascular Surgeons of Great Britain and Ireland

Membre associe étranger de la Société de Chirurgie Thoracique et Cardiovasculaire de langue Française

British Paediatric Association

European Society for Heart Transplantation

European Association for Cardiothoracic Surgery

Society of Thoracic Surgeons (USA)

American Association for Thoracic Surgery

Fellow of the European Society of Cardiology  
Fellow of the Royal College of Paediatrics and Child Health  
Membre honoraire étranger de l'Académie Royale de Médecine de Belgique  
Committee Member of the Learning from Experience Expert Group of the  
Department of Health, 1999.  
Honorary Member of the American Association for Thoracic Surgery, May 2002.

### **Selected publications**

de Leval MR, François K, Bull C, Brawn W, Spiegelhalter D. Analysis of a cluster of surgical failures. *J Thorac Cardiovasc Surg* 1994;107:914-24.

de Leval MR, Dubini G, Migliavacca F, Jalali H, Camporini G, Redington A, Pietrabissa R. Use of computational fluid dynamics in the design of surgical procedures. Application to the study of competitive flows in cavopulmonary connections. *J Thorac Cardiovasc Surg* 1996;111:502-513.

de Leval MR. Human factors and surgical outcomes: a Cartesian dream. *Lancet* 1997;349:723-5.

Pennati G, Migliavacca F, Dubini G, Pietrabissa R, de Leval MR. A mathematical model of circulation in the presence of the bidirectional cavopulmonary anastomosis in children with a univentricular heart. *Med Eng Phys* 1997;19:223-34.

de Leval MR. The Fontan circulation: What have we learned? What to expect? *Pediatr Cardiol* 1998;19:316-320.

Migliavacca F, Kilner PJ, Pennati G, Dubini G, Pietrabissa R, Fumero R, de Leval MR. Computational fluid dynamic and magnetic resonance analyses of flow distribution between lungs after total cavopulmonary connection. *IEEE Trans Biomed Eng* 1999;46:393-399.

Migliavacca F, de Leval MR, Dubini G, Pietrabissa R, Fumero R. Computational fluid dynamic simulations of cavopulmonary connections with an extracardiac lateral conduit. *Med Eng Phys* 1999; 21:187-193.

de Leval MR, Carthey J, Wright DJ, Farewell VT, Reason JT, and all UK Paediatric Cardiac Centres. Human factors and cardiac surgery: a multi-centre study. *J Thorac Cardiovasc Surg* 2000;119:661-672.

Bull C, Yates R, Sarkar D, Deanfield J, de Leval M. Scientific, ethical, and logistical considerations in introducing a new operation: a retrospective cohort study from paediatric cardiac surgery. *Br Med J* 2000;320:1168-1173.

Pennati G, Migliavacca F, Dubini G, Pietrabissa R, Fumero R, de Leval MR. Use of mathematical model to predict hemodynamics in cavopulmonary anastomosis with persistent forward flow. *J Surg Res* 2000; 89:43-52.

Hsia T-Y, Khambadkone S, Redington AN, Migliavacca F, Deanfield JE, de Leval MR. Effects of respiration and gravity on infra-diaphragmatic venous flow in normal and Fontan patients. *Circulation* 2000;102 [Suppl.III]:III-148-III-153.

Hsia T-Y, Khambadkone S, Deanfield JE, Taylor JFN, Migliavacca F, de Leval MR. Subdiaphragmatic venous hemodynamics in the Fontan circulation. *J Thorac Cardiovasc Surg* 2001;121(3):436-447.

Migliavacca F, Pennati G, Dubini G, Fumero R, Pietrabissa R, Urcelay G, Bove EL, Hsia T-Y, de Leval MR. Modeling of the Norwood circulation: Effects of shunt size, vascular resistances, and heart rate. *Am J Physiol Heart Circ Physiol* 2001;280(5):H2076-H2086.

Hsia T-Y, Khambadkone S, de Leval MR. Effect of fenestration on the sub-diaphragmatic venous hemodynamics in the total-cavopulmonary connection. *Eur J Cardio-thorac Surg* 2001;19:785-792.

Carthey J, de Leval MR, Reason JT. Institutional resilience in healthcare systems. *Qual Health Care* 2001;10(1):29-32.

Reason JT, Carthey J, de Leval MR. Diagnosing 'vulnerable system syndrome': an essential prerequisite to effective risk management. *Qual Health Care* 2001;10(suppl.2):ii21-ii25.

de Leval MR. Editorial: From art to science: A fairy tale? The future of academic surgery. *Ann Thorac Surg* 2001;72:9-12.

Carthey J, de Leval MR, Reason JT. The human factor in cardiac surgery: Errors and near misses in a high technology medical domain. *Ann Thorac Surg* 2002;72:300-305.

de Leval MR. Beyond Flatland. *Ann Thorac Surg* 2003;125:12-19.

McMahon A-M, van Doorn C, Burch M, Whitmore P, Neligan S, Rees P, Radley-Smith R, Goldman A, Brown K, Cohen G, Tsang V, Elliott M, de Leval M. Improved early outcome for end-stage dilated cardiomyopathy in children. *J Thorac Cardiovasc Surg* 2003;126:1781-1787.

Migliavacca F, Dubini G, Bove EL, de Leval MR. Computational fluid dynamics simulations in realistic 3-D geometries of the total cavopulmonary anastomosis: the influence of the inferior caval anastomosis. *J Biomech Eng* 2003;125:805-813.

Hsia T-Y, Migliavacca F, Pittaccio S, Radaelli A, Dubini G, Pennati G, de Leval M. Computational fluid dynamic study of flow optimization in realistic models of the total cavopulmonary connections. *J Surg Res* 2004;116:305-313.

Chaturvedi RR, Macrae D, Brown KL, Schindler M, Smith EC, Davis KB, Cohen G, Tsang V, Elliott M, de Leval M, Gallivan S, Goldman AP. Cardiac ECMO for biventricular hearts after paediatric open heart surgery. *Heart* 2004;5:545-551.

Kang N, Elliott M, de Leval M, van Doorn C, Tsang V. Risk prediction in paediatric open heart surgery. *Eur J Cardio-thorac Surg* 2004;26:3-11.

Ricci M, Goldman AP, de Leval MR, Cohen GA, Devaney F, Carthey J. Pitfalls of adverse event reporting in paediatric intensive care. *Arch Dis Child* 2004; 856-9.

Kang N, de Leval M, Elliott M, Tsang V, Kocyildirim E, Sehic I, Foran J, Sullivan I. Extending the boundaries of the primary arterial switch operation in patients with transposition of the great arteries and intact ventricular septum. *Circulation* 2004; 110 (Suppl. II): II-123 – II-127.

Migliavacca F, Lagana K, Pennati G, de Leval MR, Bove EL, Dubini G. Global mathematical modelling of the Norwood circulation: a multiscale approach for the study of pulmonary and coronary perfusions. *Cardiol Young* 2004; 14(suppl.3):71-76.

Freeman LJ, de Leval MR, Tsang VT. The longest functioning apical left ventricular to descending aortic valve conduit. *Ann Thorac Surg* 2005;79:1420.

Lagana K, Balossino R, Migliavacca F, Pennati G, Bove EL, de Leval MR, Dubini G. Multiscale modeling of the cardiovascular system: application to the study of pulmonary and coronary perfusions in the univentricular circulation. *J Biomech* 2005;38(5):1129-41.

Coats L, Tsang V, Khambadkone S, van Doorn C, Cullen S, Deanfield J, de Leval MR, Bonhoeffer P. The potential impact of percutaneous pulmonary valve stent implantation on right ventricular outflow tract re-intervention. *Eur J Cardiothorac Surg* 2005 Apr;27(4):536-43.