



## CURRICULUM VITAE

Jacob Karlsson  
MD PhD DESA  
Astrid Lindgren Children's Hospital  
Karolinska University Hospital  
Karolinska Institute  
Stockholm Sweden



**1 NAME**

Jacob Karlsson

**2 BIRTH DATA**

21st September 1978

**3 ADDRESS**

Work address: Department of Paediatric Anaesthesia and Intensive Care, Astrid Lindgren's Children Hospital, Karolinska University Hospital, 17176 Stockholm Sweden.

Residential address: Genetikvägen 18, 75651 Uppsala, Sweden

**4 PHONE AND EMAIL**

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[jacob.karlsson.1@ki.se](mailto:jacob.karlsson.1@ki.se)

**5 Registrations**

Swedish Specialist Register Anesthesia and Intensive care since November 2010, Id number 780921-1472

GMC 7071190, Specialist Register since November 2011

CMQ number R28530 Canada

**6 LANGUAGE SKILLS**

Swedish, English (German)

**7 DOCTORAL DEGREE**

**PhD:** Capnodynamic Determination of effective pulmonary blood flow and end expiratory lung volume: studies in children and paediatric animal models

Karolinska Institute. (Stockholm 2019-04-05).

<https://openarchive.ki.se/xmlui/handle/10616/46634>

**6 EDUCATION AND DEGREES**

09/1998-01/2004 Medical Degree, Uppsala University

08/2007-12/2007 Fellow Trauma Anaesthesia  
Tygerberg Hospital Trauma Unit, Cape Town South  
Africa, Stellenbosch University

02/2010 Specialist Register, General Medical Council UK

04/2010-07/2010 European Society of Anaesthesiology Trainee Exchange  
Program, Paediatric Anaesthesia, Birmingham Children's  
Hospital, Birmingham, UK

10/2010 European Diploma of Anaesthesiology and Intensive Care

Uppsala, Sweden

- 11/2010 Swedish National Board of Health Specialist Register in Anaesthesia and Intensive care, Stockholm, Sweden.
- 04/2013-04/2014 Fellow Paediatric Cardiac Anaesthesia, Freeman Hospital, Newcastle upon Tyne, UK
- 05/2016–04/2019 PhD student, Karolinska Institutet, Stockholm Sweden
- 09/2021-06/2022 Postdoctoral Fellow Division Pediatric Anesthesia Montreal Children's Hospital, McGill University Montreal Canada

## **7 AWARDS AND PRIZES**

- 2010 Selected Trainee Exchange Program European Society of Anesthesiology and Intensive Care
- 2018 Best Abstract: “What PEEP is needed for adequate CO<sub>2</sub> removal during laparoscopic surgery in infants: an animal study including capnodynamic assessment of effective lung volume”.  
European Society of Anaesthesia Congress, Brussels 2018
- 2018 Best Abstract: “Capnodynamic determination of cardiac output (effective pulmonary blood flow) in pulmonary hypertension and inhaled nitric oxide in pigs”.  
Swedish Society of Paediatric Anaesthesia and Intensive Care, Lund 2018.

## **9 CLINICAL EXPERTISE AND FORMAL TRAINING (INCLUDING PUBLIC HEALTH WORK)**

- 01/2004-10/2005 Internship, Gavle District General Hospital Sweden
- 10/2005-04/2007 Registrar in Anaesthesia and Intensive Care, Uppsala University Hospital Uppsala Sweden
- 09/2007-12/2007 Fellow in trauma Anaesthesia, Princess of Wales Trauma Unit at the Tygerberg Academic Hospital, Cape Town South Africa
- 04/2007-10/2010 Registrar in Anaesthesia and Intensive Care, Gavle District General Hospital

04/2010-07/2010	European Society of Anaesthesiology Trainee Exchange Program, Paediatric Anaesthesia, Birmingham Children's Hospital, Birmingham, UK
10/2010-08/2011	Consultant Anaesthetist, Gavle District General Hospital Sweden.
08/2011-04/2013	Consultant Paediatric Anaesthetist, Astrid Lindgren Children's Hospital, Stockholm, Sweden
04/2013-04/2014	Fellowship Paediatric Cardiac Anaesthesia, Freeman Hospital, Newcastle upon Tyne, UK.
2014-2015	Locum Consultant Paediatric Cardiothoracic Anaesthesia including paediatric heart and lung transplant, Freeman Hospital, Newcastle upon Tyne UK.
2014-	Consultant Paediatric Anaesthetist and Intensivist, Astrid Lindgren Children's Hospital, Stockholm, Sweden
2014-	Division Lead, Anesthesia for Paediatric Cardiac Intervention, Astrid Lindgren Children's Hospital, Stockholm, Sweden
2021-2022	Postdoctoral Fellow Paediatric Anaesthesia, Montreal Children's Hospital, Montreal, Quebec, Canada.

## **10 DEVELOPMENT WORK AT EDUCATIONAL INSTITUTIONS OR HOSPITALS**

2021	Introducing low flow anaesthesia at the Department of Paediatric Anaesthesia Astrid Lindgren Children's Hospital. Theoretical and practical introduction.
2021	Review of inpatient paediatric pain services and generation of a paediatric pain guideline booklet for the Acute Pain Service (APS) at the Montreal Children's Hospital, based on existing guidelines and recommendations. - Preparation of external review documents and organizational changes required for Acute Pain Services at Montreal Children's Hospital.
2021	Rotem protocol review for blood product management during paediatric cardiopulmonary bypass

## 11 MEMBERSHIP MEDICAL SOCIETIES

2005-	Swedish Medical Association
2010	Swedish Society of Anaesthesia and Intensive Care
2018	Swedish Society of Paediatric Anaesthesia and Intensive Care
2018	The Swedish Society of Medicine
2022	Safetots member

## 12 REVIEWER FOR PEER REVIEWED SCIENTIFIC JOURNALS

Regular reviewer for “*European Journal of Anesthesiology*”, “*Pediatric Anesthesia*” and “*Acta Anesthesiologica Scandinavica*”. Ad hoc requests from “*Nature Scientific Reports*” and “*British Journal of Anaesthesia*”. Focus of these reviews are paediatric cardiac anaesthesia and cardiopulmonary animal studies.

2021-2022: 34 reviews for “*Pediatric Anesthesia*” and 13 for “*Acta Anesthesiologica Scandinavica*”

## 13 PEER-REVIEWED ORIGINAL PUBLICATIONS

1. Kriz V, Annerén C, Lai C, **Karlsson J**, Mares J, Welsh M. The SHB adapter protein is required for efficient multilineage differentiation of mouse embryonic stem cells. *Exp Cell Res*. 2003;286(1):40-56.
2. Murphy T, McCheyne A, **Karlsson J**. Analgesic management after thoracotomy for decortication in children: a retrospective audit of 83 children managed with a paravertebral infusion-based regime. *Paediatr Anaesth*. 2016;26(7):722-6.
3. **Karlsson J**, Winberg P, Scarr B, Lönnqvist PA, Neovius E, Wallin M, et al. Validation of capnodynamic determination of cardiac output by measuring effective pulmonary blood flow: a study in anaesthetised children and piglets. *Br J Anaesth*. 2018;121(3):550-8.
4. **Karlsson J**, Wallin M, Hallbäck M, Lönnqvist PA. Capnodynamic determination of cardiac output in hypoxia-induced pulmonary hypertension in pigs. *Br J Anaesth*. 2019;122(3):335-41.
5. **Karlsson J**, Fodor GH, Dos Santos Rocha A, Lin N, Habre W, Wallin M, et al. End-expiratory lung volume assessment using helium and carbon dioxide in an experimental model of pediatric capnoperitoneum. *Acta Anaesthesiol Scand*. 2020;64(8):1106-13.

6. **Karlsson J**, Fodor GH, Dos Santos Rocha A, Lin N, Habre W, Wallin M, et al. Determination of adequate positive end-expiratory pressure level required for carbon dioxide homeostasis in an animal model of infant laparoscopy. *Acta Anaesthesiol Scand*. 2020;64(8):1114-9.
7. **Karlsson J**, Lönnqvist PA, Wallin M, Hallbäck M. A Continuous Noninvasive Method to Assess Mixed Venous Oxygen Saturation: A Proof-of-Concept Study in Pigs. *Anesth Analg*. 2020.
8. **Karlsson J**, Svedmyr A, Wiegele M, Lönnqvist PA, Wallin M, Hallbäck M. Cardiac output assessments in anesthetized children: dynamic capnography vs. esophageal Doppler. *Anesth Analg*. 2021, In press.
9. Svedmyr A, Konrad M, Wallin M, Hallbäck M, Lönnqvist PA, **Karlsson J**. Non-invasive capnodynamic mixed venous oxygen saturation during major changes in oxygen delivery. *J. Clin. Monit. Comput*. 2021. In press.
10. **Karlsson J**, Lewis G, Larsson P, Lönnqvist PA, Diaz S. Intranasal dexmedetomidine sedation for paediatric MRI by radiology personnel: A retrospective observational study. *Eur J Anaesthesiol*. 2023;40(3):208-15.
11. **Karlsson J**, Hallbäck M, Svedmyr A, Lönnqvist PA, Wallin M. Standardized blood volume changes monitored by capnodynamic hemodynamic variables: An experimental comparative study in pigs. Accepted for publication in *Acta Anaesthesiol Scand* 2023.
12. Öhman T, Campoccia Jalde F, Fredby M, Björne H, **Karlsson J**. Effect of external dead space removal on CO<sub>2</sub> homeostasis in mechanically ventilated adult Covid-19 patients. Accepted for publication in *Acta Anaesthesiol Scand* 29-Mar-2023.
13. **Karlsson J**, Peters E, Denault A, Beaubien-Souligny W, Karsli C, Roter E. Assessment of fluid responsiveness in children using respiratory variations in descending aortic flow. *Acta Anaesthesiol Scand*. 2023.

## 14 EDITORIALS

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|------|---|
| 2021 | <b>Karlsson J</b> , Bertolizio G. Anesthesia Service provision for MRI: Is shifting the technique enough? <i>Paediatr Anaesth</i> . 2021;31(9):916-7. |
| 2022 | <b>Karlsson J</b> , Johansen M. Dysnatremia in children, why is it so hard to stay normal? <i>Acta Anaesthesiol Scand</i> . 2022;66(5):548-9.         |
| 2022 | <b>Karlsson J</b> , Johansen M, Engelhardt T. SARS-CoV-2 airway reactivity in children: more of the same? <i>Anaesthesia</i> . 2022;77(9):956-8.      |

## 15 REVIEWS

- 2021 **Karlsson J, Lönnqvist PA.** Capnodynamics-Measuring cardiac output via ventilation. *Paediatr Anaesth.* 2022;32(2):255-61.
- 2022 **Karlsson J, Lönnqvist PA.** Blood pressure and flow in pediatric anesthesia: An educational review. *Paediatr Anaesth.* 2022;32(1):10-6.
- 2023 **Karlsson J, Lönnqvist PA.** Capnodynamics - noninvasive cardiac output and mixed venous oxygen saturation monitoring in children. *Front Pediatr.* 2023;11:1111270.

## 16 PEER REVIEWED GRANTS

- 2022 Continuous, non-invasive monitoring of mixed venous oxygen saturation in mechanically ventilated patients: A new application of the Capnodynamic Method. CO-applicant. 1150000 SEK. Swedish Medical Association. Grant FoUI-953971.
- 2021 A bedside method to measure basal ganglia perfusion in neonates with congenital heart disease. Main applicant. 34000SEK. Swedish Medical Association Research Travel Scholarship. Grant number: SLS-965457
- 2023 Extremes of oxygen delivery in children. Main applicant. 8000SEK. Swedish Medical Association Research Travel Scholarship. Grant number: SLS-982813.

## 17 NON-PEER REVIEW GRANTS

- 2020-2023 Unrestricted Research Grant Maquet Critical Care AB, Solna Sweden. 160000SEK yearly for three years.

## 18 INVITED LECTURES, WORKSHOPS AND FACULTY

- 2008 “Aspects of trauma anaesthesia in South Africa”.

- Keynote speaker, Swedish Society for Anaesthesia and Intensive Care, Uppsala, Sweden.
- 2014 “International training experiences in anaesthesia” European Society of Anaesthesiology meeting, Stockholm, Sweden.
- 2017 “Capnodynamics in Paediatric Anaesthesia and Intensive Care”. Invited morning lecture, Universitäts Kinderspital, Zürich, Switzerland.
- 2019 “Normal blood pressure during paediatric and neonatal anaesthesia, an elusive target”. Swedish Society of Paediatric Anaesthesia and Intensive Care, Stockholm 2019.
- 2019 Faculty member, 9<sup>th</sup> International Symposium on the Pediatric Airway, Geneva Switzerland.  
Workshop on hands-on ventilation modes, capnography, high-flow oxygen therapy.
- 2021 “Capnodynamic determination of effective pulmonary blood flow and mixed venous oxygen saturation in children and animal models”. Invited morning lecture, Universitätsklinik für Anästhesie, Allgemeine Intensivmedizin und Schmerztherapie der Medizinischen Universität Wien / AKH Wien.
- 2022 Faculty member, 10<sup>th</sup> International Symposium on the Pediatric Airway, Genova Italy.  
Lecturing on airway ultrasound and capnodynamic paediatric cardiac output monitoring with on paediatric airway ultrasound.
- 2022 Invited speaker to Scottish Paediatric Anaesthesia Network, Edinburgh 2022: “SARS CoV-2 Airway Reactivity in Children”
- 2023 Visiting Professor at The Grand Rounds Montreal Children’s Hospital on the topic “Pediatric Airway Ultrasound”.

## **19 INVITED RESEARCHER**

- 12/2015 Guest Researcher, European Synchrotron Radiation Facility, Grenoble, France.



04/2018 Two-week laboratory work at Prof Walid Habre's laboratory, Geneva Switzerland. Planned and conducted a research project leading to two peer-reviewed publications.

## **20 ACADEMIC PhD COURSES**

2017 Ethics in Science. 1,5 weeks. Karolinska Institute, Stockholm Sweden

2017 Basic Course in Medical Statistics. in Science. 3 weeks. Karolinska Institute, Stockholm Sweden

2017 Research Presentation. in Science. 1,5 weeks. Karolinska Institute, Stockholm Sweden

2017 Scientific Writing and Information Course. Presentation. in Science. 3 weeks. Karolinska Institute, Stockholm Sweden.

2018 Swedish Legislation and ethics, animal welfare and 3R. Uppsala University, Uppsala, Sweden.

2018 Laboratory Animal Science for persons who are carrying out procedures. Uppsala University, Uppsala, Sweden.

## **21 POST DOC ACADEMIC COURSES**

2020 Introductory Doctoral Supervision Course, One week full time. Karolinska Institute, Stockholm Sweden.

2021 Pedagogy for Doctoral Supervisors. Two weeks full time. Karolinska Institute, Stockholm Sweden.

2022 Stepping stone course: "Pedagogiska grunder i handledning i verksamhetsförlagd undervisning-nätbaserad". Karolinska Institute, Stockholm Sweden. One week full time.

## **22 PhD SUPERVISOR**

2020-present Main supervisor for Dr.Anders Svedmyr. Thesis project: Validation of capnodynamic determination of mixed venous oxygen saturation and respiratory quotient during mechanical ventilation. Karolinska Institute, Stockholm Sweden. Dissertation planned 2024.

## **23 PhD CO-SUPERVISOR**

2021-present CO-supervisor for Dr.Tomas Öhman. Thesis project: Development of a capnodynamic method for monitoring circulation and ventilation during anaesthesia. Registration in process. Karolinska Institute, Stockholm Sweden.

## **24 BACHELORS THESIS SUPERVISOR**

2018-2019 Main-supervisor for Anna Bergendahl. Thesis project: "Registration of cardiac output normal values in anesthetized children using continuous dynamic capnography". Örebro University, Örebro Sweden.

2020-2021 Main-supervisor for Sam Stenman. Thesis project: "Subclavian vein ultrasound assessment of hydration status for predicting hypotension in children after anaesthesia induction". Karolinska Institute, Stockholm Sweden.

## **25 TEACHING**

2016- 39 hours teaching on the subject Inotropic Support and Hemodynamics  
"Specialistsjuksköterskeprogrammen – anestesijukvård och intensivvård i kurserna Omvårdnad inom Intensivvård 1, 2IN009 och Anestesisjukvård-peiperativ omvårdnad 1, 2AN009"

2021-2022 Montreal Childrens Hospital Teaching

Cardiac output measurements in paediatric anaesthesia: 3 hours

Covid 19 and airway reactions in paediatric anaesthesia: 4 hours

Near infrared spectroscopy in paediatric anaesthesia: 3 hours

Teaching paediatric pain management:  
40 hours  
Total 50 hours

2022- Planning and developing the Safetots Podcast series as part of the Safetots initiative educational program. Editor of the podcast currently. Four episodes published, episodes published bi monthly at [www.safetots.org](http://www.safetots.org)

## 26 FUTURE ACADEMIC PROGRESS

**Application for Associate Professor at The Karolinska Institute submitted no later than September 2023.**

## 27 REFERENCES

Prof. Thomas Engelhardt, MD, PhD, FRCA Queen Elizabeth Hospital of Montreal Foundation Chair Paediatric Anaesthesia Anaesthetist-in-Chief, Department of Anesthesia, Montreal Children's Hospital.  
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