

PD Dr. med. Alexander Robert Schmidt

Hospital address

Center of Academic Medicine –
Stanford University School of Medicine
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ACADEMIC HISTORY

Universities Attended

2000 – 2007 Faculty of Medicine, University of Giessen, Germany

Medical License

05/2007 No A xxxxxx, Hessian Examinations and Health Care Investigations Office,
Germany

03/2019 2113 Certificate of Registration, Medical Board of California, No Fxxx

MD-Thesis

2009 **Magna cum laude for:** „Opioidreceptors on immunocytes:
Physiological and pathophysiological regulation processes“.
Under supervision of Prof. Dr. med. Hempelmann and Prof. Dr.
med. ID Welters

PD-Thesis

2020 Optimizing length-based body weight estimation for drug dosing
and recommendation of medical equipment during paediatric
emergencies.

Residency and Fellowship Training

- 07/2007 – 06/2008 **Resident, Department for Visceral-, Thoracic- and Vascular Surgery**
Kantonsspital St. Gallen (Prof. Dr. med. J. Lange)
- 07/2008– 07/2011 **Resident, Clinic for Anesthesia, Intensive-, Emergency- and Pain Medicine**
Kantonsspital St. Gallen (Prof. Dr. med. Th. Schnider)
- 10/2011 – 09/2012 **Resident, Department of Anesthesia**
University Children´s Hospital Zurich (Prof. Dr. med. M. Weiss)
- 12/2012 – 11/2014 **Resident, Institute of Anesthesiology**
University Hospital Zurich (Prof. Dr. med. D. R. Spahn)
- Resident and Post-graduate Fellow, Adult Cardiac Anesthesia**
University Hospital Zurich
- Post-graduate Fellow, Adult Cardiac Intensive Care**
University Hospital Zurich

Board Certification

- 2014 Specialist in Anaesthesia - National Specialty Diploma of Anesthesiology
(Foederatio Medicorum Helveticum [FMH])

PAST EMPLOYMENTS

- 01/2015 – 09/2016 **Attending, Department of Anesthesia**
University Children´s Hospital Zurich (Prof. Dr. med. M. Weiss)
- 10/2016 – 03/2017 **Post-graduate Fellow Pediatric and Pediatric Cardiac Intensive Care**
University Children´s Hospital Zurich (Prof. Dr. med. B. Frey)
- 4/2017 – 09/2017 **Junior Attending, Pediatric Cardiac Intensive Care**
University Children´s Hospital Zurich (Prof. Dr. med. B. Frey)
- 10/2017 – 12/2018 **Attending, Department of Anesthesia**
University Children´s Hospital Zurich (Prof. Dr. med. M. Weiss)
- 01/2019 – 12/2019 **Advanced Clinical Experience Pediatric Cardiac Anesthesia**
Stanford University, Lucile Packard Children´s Hospital Stanford
(Head: Prof. M. Boltz, Chairman: Prof. R. Pearl)

CURRENT FACULTY POSITION

- Since 2020 **Clinical Associate Professor - Pediatric Cardiac Anesthesia**
Stanford University – School of Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Subdivision of Pediatric Cardiac Anesthesia (Head: Prof. M. Boltz, Chair: Prof. B Bateman)

Further Professional Education

04/2008	Advanced Trauma Life Support (ATLS)
03/2009	Advanced Cardiac Life Support (ACLS)
03/2009	Emergency Physician Course (Swiss Society of Resuscitation and Emergency Medicine)
04/2011	Pediatric Advanced Life Support (PALS)
04/2011	Core Instructor Course for PALS
10/2012	Transoesophageal Echocardiography Course 40 hours according to the German Society of Anesthesia
10/2012	Training in Transoesophageal Echocardiography 2 weeks clinical practice
01/2020	Perioperative Transesophageal Echocardiography Course, UCSD
05/2021	USMLE Step 1
07/2021	USMLE Step2 Good Clinical Practice Modul 1 – 3 & IRB BioMed

EDUCATION RESPONSIBILITIES**Past Clinical Teaching Responsibilities**

2011 – 2018	Pediatric Advanced Life Support Instructor, 1-2 courses per year
2016 – 2018	Medical student teaching (2-3 students), Department of Pediatric Anesthesia, University Children´s Hospital Zurich: one half day per month during winter semester (approx. 2-3 times per period)
2015 – 2018	Workshop Instructor for “Difficult Pediatric Airway Management” Workshop Instructor for “Emergency Front Neck Access and Emergency Ventilation with Ventrain® in Children”

Current Stanford Teaching Responsibilities since 2019

- Clinical teaching in the operation theatre for residents and fellows with regard to airway management, vascular access, management of patients with congenital cardiac problems
- Pediatric Cardiac Anesthesia Lecture (Residents and Fellows)
- Didactic Pediatric Anesthesia Fellow Lecture (Fellows)

Past Students / Trainees / Mentorship

2015 – 2017	Rebecca Mohr, MD candidate, supervision of doctoral research project (Zurich)
2015 – 2018	Christian Both, Postgraduate, supervision of doctoral research project (Zurich)
2016 – 2018	Sivan Morgenroth, MD candidate, supervision of doctoral research project (Zurich)
2019 – 2020	Yamini Adusumelli, MD candidate, supervision for research project (Stanford)

AWARD: TEACHER OF THE YEAR 2020/21 in Pediatric Anesthesia, Stanford University – School of Medicine.

PUBLICATIONS

Original peer-reviewed Articles (31 total, 2 in submission)

1. Glattard E, Welters ID, Lavaux T, Muller AH, Laux A, Zhang D, **Schmidt AR**, Delalande F, Laventie BJ, Dirrig-Grosch S, Colin DA, Van Dorsselaer A, Aunis D, Metz-Boutigue MH, Schneider F, Goumon Y. Endogenous morphine levels are increased in sepsis: a partial implication of neutrophils. *PLoSOne*. 2010; 5(1): e8791
2. Kemper M, Dullenkopf A, **Schmidt AR**, Gerber A, Weiss M. Nasotracheal intubation depth in pediatric patients. *Br J Anaesth*. 2014; 113(5): 840-46
3. **Schmidt AR**, Buehler P, Seglias L, Stark T, Brotschi B, Renner T, Sabandal C, Klaghofer R, Weiss M, Schmitz A. Gastric pH and residual volume after 1 versus 2 h fasting time for clear fluids in children. *Br J Anaesth*. 2015; 114(3): 477-82
4. Schuepbach R, Grande B, Camen G, **Schmidt AR**, Fischer H, Sessler DI, Seifert B, Spahn DR, Ruetzler K. Intubation with VivaSight or conventional left-sided double-lumen tubes: a randomized trial. *Can J Anaesth*. 2015; 62(7): 762-69
5. Ruetzler K, Imach S, Weiss M, Haas T, **Schmidt AR**. Comparison of five video laryngoscopes and conventional direct laryngoscopy: Investigations on simple and simulated difficult airways on the intubation trainer. *Anaesthesist*. 2015; 64(7): 513-19
6. **Schmidt AR**, Haas T, Buehler P, Ruetzler K, Weiss M, Schmitz A. Comparison of Broselow-Tape and pediatric emergency ruler. Accuracy of weight estimation. *Notfall Rettungsmed*. 2016; 19: 129-35
7. Haas T, Spielmann N, Restin T, **Schmidt AR**, Schmutz M, Cushing MM. Economic aspects of intraoperative coagulation management targeting higher fibrinogen concentrations during major craniotomy surgery. *Paediatr Anaesth*. 2016; 26(1): 77-83
8. **Schmidt AR**, Ruetzler K, Haas T, Schmitz A, Weiss M. Impact of oxygen sources on performance of the Ventrain® ventilation device in an in vitro set-up. *Acta Anaesthesiol Scand*. 2016; 60(2): 241-49

9. **Schmidt AR**, Ruetzler K, Haas T, Schmitz A, Weiss M. Monitoring tidal volumes when using the Ventrain® emergency ventilator. *Anaesthesist*. 2016; 65(7): 514-20
10. **Schmidt AR**, Ulrich L, Seifert B, Albrecht R, Spahn DR, Stein P. Ease and difficulty of pre-hospital airway management in 425 paediatric patients treated by a helicopter emergency medical service: a retrospective analysis. *Scand J Trauma Resusc Emerg Med*. 2016; 24: 22
11. Schmitz A, **Schmidt AR**, Buehler P, Schraner T, Frühauf M, Weiss M, Klaghofer R, Kellenberger CJ. Gastric ultrasound as a preoperative bedside test for residual gastric contents volume in children. *Paediatr Anaesth*. 2016; 26(12): 1157-64
12. Thomas J, Weiss M, **Schmidt AR**, Buehler P. Performance of adjustable pressure-limiting (APL) valves in two different modern anaesthesia machines. *Anaesthesia*. 2017; 72(1): 28-34
13. Both CP, Schmitz A, Buehler P, Weiss M, **Schmidt AR**. How accurate are pediatric emergency tapes? A Comparison of 4 emergency tapes with different length-based weight categorization. *Pediatr Emerg Care*. 2017 Jul 11.
14. Buehler P, Spielmann N, Buehrer S, **Schmidt AR**, Weiss M, Schmitz A. Intraoperative music application in children and adolescents - a pilot study. *Acta Anaesthesiol Scand*. 2017; 61(8): 895-903
15. Both C, Schmitz A, Buehler P, Wittwer J, Weiss M, **Schmidt AR**. Comparison of a paediatric emergency ruler with a digital algorithm for weight and age estimation. *Acta Anaesthesiol Scand*. 2017; 61(9): 1122-32
16. Mohr R, Thomas J, Cannizzaro V, Weiss M, **Schmidt AR**. Impact of endotracheal tube shortening on work of breathing in neonatal and pediatric in vitro lung models. *Paediatr Anaesth*. 2017; 27(9): 942-48
17. **Schmidt AR**, Buehler P, Meyer J, Weiss M, Schmitz A, Both CP. Length-based body weight estimation in paediatric patients: the impact of habitus – a clinical observational trial. *Acta Anaesthesiol Scand* 2018; 62: 1389-95

18. Wetzel O, **Schmidt AR**, Seiler M, Scaramuzza D, Seifert B, Spahn DR, Stein P. A smartphone application to determine body length for body weight estimation in children: a prospective clinical trial. *J Clin Monit Comput.* 2018; 32(3): 571-78
19. Morgenroth S, Thomas J, Cannizzaro V, Weiss M, **Schmidt AR**. Accuracy of near patient versus anaesthesia respirator inbuilt spirometry for monitoring tidal volumes in an in-vitro paediatric lung model. *Anaesthesia.* 2018; 73(8): 972-79
20. **Schmidt AR**, Buehler P, Both Ch, Wiener R, Klaghofer R, Hersberger M, Weiss M, Schmitz A. Liberal fluid fasting: impact on gastric pH and residual volume in healthy children undergoing general anaesthesia for elective surgery. *Br J Anaesth.* 2018; 121(3): 647-55
21. Thomas J, Weiss M, Cannizzaro V, Both CP, **Schmidt AR**. Work of breathing for cuffed and uncuffed pediatric endotracheal tubes in an in-vitro lung model setting. *Paediatr Anaesth.* 2018 Sep; 28(9): 780-87
22. Dave MH, Kemper M, **Schmidt AR**, Both CP, Weiss M. Pediatric airway dimensions – A summary and presentation of existing data. *Paediatr Anaesth.* 2019 Aug; 29(8): 782-789.
23. **Schmidt AR**, Buehler KP, Thomas J, Ruetzler K, Weiss M, Both CP. Tailor-made pediatric emergency medicine—a digital option. *Notfall + Rettungsmedizin: Journal for preclinical and clinical emergency medicine.* 2020 Jan. 23(7): 538-545
24. **Schmidt AR**, Buehler KP, Thomas J, Weiss M, Both CP. The electronic Pediatric Emergency Ruler - A digital alternative to the BroselowTape. *Medical Research Archives Journal.* Vol.8 issue 5 May 2020
25. Both CP, Diem B, Alonso E, Kemper M, Weiss M, **Schmidt AR**, Thomas J. A modified rabbit training model for establishing an emergency Front of Neck Airway in children. *Br J Anaesth.* 2021; 126(4): 896-902
26. Leuze C, Zoellner A, **Schmidt AR**, Fischer MJ, Cushing RE, Joltes K, Zientara GP. Augmented Reality Visualization Tool For The Future of Tactical Combat Casualty Care. *J Trauma Acute Care Surg.* 2021 Aug; 91(2S Suppl 2): S40-S45.

27. **Schmidt AR**, Collins RT, Adusumelli Y, Ramamoorthy C, Weng Y, MacMillen K, Navaratnam M. Impact of modified anesthesia management for pediatric patients with Williams Syndrome
J Cardiothorac Vasc Anesth. 2021 Dec; 35(12): 3667-3674
28. **Schmidt AR**, Fehr J, Man J, D’Souza G, Wang E, Claire R, Mendoza J. Pre-operative fasting times for clear liquids at a tertiary children’s hospital – what can be improved?
Anesth Pain Med. 2021 Jul; 16(3): 266-272.
29. Frykholm P, Disma N, Andersson H, Beck C, Bouvet L, Cerceuil E, Elliott E, Hofmann J, Isserman R, Klaucaue A, Kuhn F, de Queiroz Siqueira M, Rosen D, Rudolph D, **Schmidt AR**, Schmitz A, Stocki D, Sümpelmann R, A. Stricker P, Thomas M, Veyckemans F, Afshari A. Preoperative fasting in children: guideline from the European Society of Anaesthesiology and Intensive Care
Eur J Anaesthesiol. 2022 Jan; 39(1): 4-25.
30. **AR Schmidt**, C Ramamoorthy. Bronchopulmonary Dysplasia.
Paediatr Anaesth. 2022 Feb;32(2):174-180. Epub 2021 Dec 15.
31. A Giustini, A Dabbagh, **AR Schmidt**. Future Approaches for Anesthesia in Congenital Cardiac Surgery & Interventional Procedures. Congenital Heart Disease in Pediatric and Adult Patients: Anesthetic and Perioperative Management. Springer Cham (accepted Book Chapter)
32. Quinonez A, Vu E, **Schmidt AR**, Wilson P, Monico E. A retrospective comparison of pectoralis block versus no block for placement of intracardiac devices. (in submission process)
33. Buehler PK, Weiss M, Haegglblom T, Wendel P, Both CP, **Schmidt AR**, Wehren M, Thomas J. Close collaboration between industry and clinical experts to improve patient care. (in submission process)

Editorial (1 total)

1. **Schmidt AR** and Schmitz A. Can we use ultrasound examination of gastric content as a diagnostic test in clinical anaesthesia?
Paediatr Anaesth. 2019 Feb; 29(2): 112-3
Impact factor: 2.389 (2017)

Reviews (2 total)

1. **Schmidt AR**, Weiss M, Engelhardt T. The paediatric airway: Basic principles and current developments.
Eur J Anaesthesiol. 2014; 31(6): 293-99
2. Schmitz A and **Schmidt AR**. Pre-anaesthetic Fluid and Food Intake - Current Recommendations.
Praxis. 2014; 103(23): 1379-84

Letters (3 total)

1. Schmitz A, **Schmidt AR** et. al. Comment on 'Ultrasound assessment of gastric volume in the fasted pediatric patient undergoing upper gastrointestinal endoscopy: Development of a predictive model using endoscopically suctioned volumes'.
Paediatr Anaesth. 2016; 26: 566-67
2. **Schmidt AR** et al. “. . .we still never know the flow at the catheter tip”. Acta Anaesthesiol Scand. 2016; 60: 1479-80
3. **Schmidt AR** et al. “Prevent the need for front of neck access”.
Paediatr Anaesth. 2017; 27:106-9

Abstracts and Poster Presented at Meetings (8 total)

1. Welters ID, **Schmidt AR**. Opioid receptor expression on neutrophils: effect of LPS treatment.
Br J Anaesth. 98: 297P (2007). [abstract and poster]
2. **Schmidt AR**, Welters ID. Opioid receptor expression on neutrophils: effect of tumour necrosis factor alpha treatment.
Critical Care 2007. 11(Suppl 2): P430. [abstract and poster]
3. **Schmidt AR**, Ruland P, Seglias JS, et al. Gastric pH and residual volume after 1 versus 2 hours fasting time for clear fluids in children.
Swiss Med Forum. 2012; 42: 8S
4. **Schmidt AR**, Ruetzler K, Haas T, et al. Ventrain®'s performance with different oxygen sources in a pediatric lung model.
ESPA 2013, Geneva, Switzerland. [abstract and poster]
5. **Schmidt AR**, Ruetzler K, Haas T, et al. Monitoring in- and expiratory tidal volumes in the new Ventrain® emergency ventilation device.
ESPA 2013, Geneva, Switzerland. [abstract and poster]

6. **Schmidt AR**, Collins RT, Adusumelli Y, et al. Anesthesia management for pediatric patients with high risk Williams syndrome - a quality improvement study. APAGBI 2020 Conference, London, United Kingdom (2020, May 13-15, conference canceled, COVID-19). [abstract and poster]

Invited Presentations

- 2013 Instructor Pediatric Airway Management Workshop, European Society of Pediatric Anesthesia, Annual Meeting, Geneva 2013
- 2014 Instructor Pediatric Airway Management Workshop, European Society of Pediatric Anesthesia, Annual Meeting, Prague 2014
- 2014 “Ventrain® - What’s new” 13. Airway Management Symposium St. Gallen, Switzerland
- 2018 “PONV – State of the Art” KATZ-Congress, University Children’s Hospital Zurich, Switzerland
- 2021 Preoperative fasting in children – What you need to know. ASPIRE lecture John Hopkins University, USA

Reviewer for medical scientific journals

- Since 2018 Pediatric Pulmonology
- Since 2018 BMC Anesthesiology
- Since 2019 BMC Pediatrics
- Since 2019 Journal Anesthesiology Research and Practice
- Since 2019 Journal Biomed Research International
- Since 2020 Pediatric Anesthesia
- Since 2021 Journal Cardiovascular Anesthesia
- Since 2021 British Journal of Anesthesia

Board Invitation

- 2019 European Society of Anaesthesia: Preoperative Fasting Guidelines Task Force
- 2021 Society of Pediatric Anesthesia: Quality and Safety committee for evaluation of new fasting guidelines in the United States
- 2022 Hemostasis Interest Group, CCAS
- 2022 ACHD Special Interest Group, CCAS