

**Name**  
Associate Professor Dr. med. Carolin Sonne

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**Education (University and year of graduation)**  
Medical Studies, Ludwig-Maximilians-University, Munich, Germany  
Graduation in June 2003

**Specialty (Title and date of acquisition)**

- Cardiology (German Board certification 2012)
- Interventional Cardiology (Certification of the German Cardiac Society 2014)
- Internal Medicine (German Board certification 2010, American Board certification 2007)

**Postgraduate Degree - PhD**

- Associate Professor of Internal Medicine (certification in March 2014), Topic: „Heart Failure and Cardiac Resynchronisation Therapy (CRT): Role of 3D-Echocardiography“
- Master of Medical Education, University Heidelberg (2014)
- Doctorate in Medicine: Bone loss in congestive heart failure (certification in January 2006)

**Clinical experience**

Since Feb 16	Private Practice for Cardiology in Athens and Interventional Cardiology at Mediterraneo Hospital Glyfada and German Heart Center Munich <ul style="list-style-type: none"><li>• Clinical Cardiology</li><li>• Interventional Cardiology (Cardiac catheterization, Coronary artery Ballon dilatation and Stent Implantation, Trans-Catheter Aortic Valve Implantation, TAVI, interventional therapy of mitral valve insufficiency, Mitra-Clip)</li></ul>
Sep 07-Dec 15	Cardiology, German Heart Centre, University Hospital Klinikum rechts der Isar, Munich, Germany <ul style="list-style-type: none"><li>• Director of the Department of Heart Failure and of the Department of Echocardiography (since 2012)</li><li>• Interventional Cardiology (since 2010), Senior attending physician of the Heart Catheter Laboratory (Certification "Interventional Cardiology" of the German Cardiac Society)</li><li>• Trans-Catheter Aortic Valve Implantation (TAVI)</li></ul>
Jun 04-Jun 07	University of Chicago Medical Center, Chicago, USA Residency in Internal Medicine, American Internal Medicine Boards (2007)
Jan-Apr 04	Ludwig-Maximilians-University Hospital, Munich, Germany, First year house officer

## Scientific activity

Parallel to the clinical work Dr. Sonne continues intensive research in various fields of Cardiology and teaching of medical students at the Technical University Munich. Moreover Dr. Sonne participates in a number of national and international scientific congresses, presenting the results of her research and publishing in medical Journals.

Her clinical research focuses on heart failure, interventional therapy of structural heart diseases (Trans-Catheter Aortic Valve Implantation, TAVI and interventional therapy of mitral valve insufficiency: Mitral Valve Clipping) and three-dimensional echocardiography.

## Research

### First or last Author

- Rosner S, Orban M, Braun D, Hadamitzky M, **Sonne C**. The incremental benefit of end diastolic flow reversal in the upper descending aorta in grading aortic insufficiency - focus on valve morphology (bicuspid versus tricuspid aortic valves): an echocardiography and MRI study (to be submitted)
- **Sonne C**, Persch H, Rosner S, Ott I, Nikendei C. Effektivität eines „Blended-Learning“-Konzeptes zur Optimierung eines internistischen Untersuchungskurses am Patientenbett: eine randomisiert-kontrollierte Pilotstudie. (submitted to GMS Journal for Medical Education)
- Hasema Persch, Michael Karl, Daniel Braun, Martin Orban, Jörg Hausleiter, Julinda Mehilli, Steffen Massberg, Heribert Schunkert, Adnan Kastrati1, Ilka Ott, **Carolin Sonne**. Prognostic Echocardiographic Parameters for Successful Transcatheter Edge-to-Edge Mitral Valve Repair. (To be submitted)
- **Sonne C**, Bott-Flügel L, Hauc S, Rosner S, Lesevic H, Karl M, Hadamitzky M, Wolf P, Schunkert H, Kolb C. Predictors of clinical response to optimized cardiac resynchronization therapy. Submitted to Am J of Cardiol
- Lesevic H, Karl M, Braun D, Barthel P, Orban M, Pache J, Hadamitzky M, Mehilli J, Stecher L, Massberg S, Ott I, Schunkert H, Kastrati A, **Sonne C\***, Hausleiter J. Long-Term Outcomes After MitraClip Implantation According to the Presence or Absence of EVEREST Inclusion Criteria. Am J Cardiol. 2017 Apr 15;119(8):1255-1261. (\*shared last authorship)
- Fünger SM, Lesevic H, Rosner S, Ott I, Berberat P, Nikendei C, **Sonne C**. Improved self- and external assessment of the clinical abilities of medical students through structured improvement measures in an internal medicine bedside course. GMS Journal for Medical Education 2016, Vol 33(4)
- Lesevic H, **Sonne C\***, Braun D, Orban M, Pache J, Kastrati A, Schömig A, Mehilli J, Barthel P, Ott I, Sack G, Massberg S, Hausleiter J. Acute and Midterm Outcome After MitraClip Therapy in Patients With Severe Mitral Regurgitation and Left Ventricular Dysfunction. Am J Cardiol. 2015 Sep 1;116(5):749-56 (\*shared first authorship)
- **Sonne C**, Bott-Flügel L, Hauck S, Hadamitzky M, Lesevic H, Demetz G, Braun D, Wolf P, Hausleiter J, Schömig A, Kolb C. Three-dimensional echocardiographic optimization improves outcome in cardiac resynchronization therapy compared to ECG optimization: a randomized comparison. Pacing Clin Electrophysiol. 2014 Mar;37(3):312-20
- **C Sonne**, R Vogelmann, S Lesevic, L Bott-Flügel, I Ott, M Seyfarth. Significant improvement of a clinical training course in physical examination after basic structural changes in the teaching content and methods. GMS Z Med Ausbild 2013; 30(2):Doc21

- Sonne C, Bott-Flügel L, Lesevic H, Barthel P, Michalk F, Hoppe K, Hauck S, Hausleiter J, Kolb C, Schömig A. Immediate beneficial hemodynamic effects of a novel real-time 3D-echocardiographic optimization protocol of cardiac resynchronization therapy. *PLoS One.* 2012;7(2):e30964
- Sonne C, Sugeng L, Weinert L, Watanabe N, Saito K, Yoshida K, Takeuchi M, Lang RM. Age and Body Surface Area Dependency of Mitral Valve Annular and Tenting Parameters: Assessment by Real-Time 3D Echocardiography. *EJE* 2009;10:287-294
- Sonne C, Sugeng L, Takeuchi M, Weinert L, Childers R, Mor-Avi V, Lang RM. Real-time three-dimensional echocardiographic assessment of left ventricular dyssynchrony: Pitfalls in patients with dilated cardiomyopathy. *J Am Coll Cardiol Img* 2009; 2:802-812
- Sonne C, Xie F, Lof J, Oberdorfer J, Phillips P, Everbach EC, Porter TR. Differences in Definity and Optison microbubble destruction rates at a similar mechanical index with different real time perfusion systems. *J Am Soc Echocardiogr* 2003;16:1178-85

#### **Coauthor**

- Steppich B, Stegmüller F, Rumpf PM, Pache J, Sonne C, Lesevic H, Braun D, Hausleiter J, Kasel AM, Ott I. Vascular complications after percutaneous mitral valve repair and venous access closure using suture or closure device. *J Interv Cardiol.* 2018 Apr;31(2):223-229
- Orban M, Lesevic H, Orban M, Braun D, Deseive S, Sonne C, Hutterer L, Grebmer C, Khandoga A, Pache J, Mehilli J, Nähbauer M, Schunkert H, Massberg S, Hagl C, Kastrati A, Boekstegers P, Ott I und Hausleiter J. Predictors for long-term survival after transcatheter edge-to-edge mitral valve repair. *J Interv Cardiol.* 2017 Jun;30(3):226-233
- Martin Orban, Daniel Braun, Mathias Orban, Christian Grebmer, Dirk Sibbing, Raffael Thaler, Janine Tittus, Fritz Wimbauer, Hasema Lesevic, **Carolin Sonne**, Julinda Mehilli, Ilka Ott, Michael Nähbauer, Steffen Massberg, Peter Boekstegers, Jörg Hausleiter. Long-Term Outcome of Patients with Severe Biventricular Heart Failure and Severe Mitral Regurgitation After Percutaneous Edge-to-Edge Mitral Valve Repair. *J Interv Cardiol* 2015 Apr 10. Epub 2015 Apr 10.
- Daniel Braun, Fabian Michalk, Martin Orban, Petra Barthel, Katharina Hoppe, **Carolin Sonne**, Hasema Lesevic, Jürgen Pache, Julinda Mehilli, Adnan Kastrati, Jörg Hausleiter, Steffen Massberg. Three-dimensional transoesophageal echocardiography for the assessment of clip attachment to the leaflets in percutaneous edge-to-edge repair of the mitral valve. *EuroIntervention.* 2013 Jan 30
- Braun D, Lesevic H, Orban M, Michalk F, Barthel P, Hoppe K, Sonne C, Pache J, Mehilli J, Kastrati A, Hausleiter J, Massberg S. Percutaneous edge-to-edge repair of the mitral valve in patients with degenerative versus functional mitral regurgitation. *Catheter Cardiovasc Interv.* 2014 Jul 1;84(1):137-46
- Orban M, Braun D, Sonne C, Orban M, Thaler R, Grebmer C, Lesevic H, Schömig A, Mehilli J, Massberg S, Hausleiter J. Dangerous liaison: successful percutaneous edge-to-edge mitral valve repair in patients with end-stage systolic heart failure can cause left ventricular thrombus formation. *EuroIntervention.* 2013 Oct 30 [Epub ahead of print]
- Hadamitzky M, Langhans B, Hausleiter J, Sonne C, Kastrati A, Martinoff S, Schömig A, Ibrahim T. The Assessment of Area at Risk and Myocardial Salvage After Coronary Revascularization in Acute Myocardial Infarction: Comparison Between CMR and SPECT. *JACC Cardiovasc Imaging.* 2013 Mar;6(3):358-69

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- Birgit Langhans, Tareq Ibrahim, Jörg Hausleiter, **Carolin Sonne**, Stefan Martinoff, Albert Schömig, Martin Hadamitzky. Gender Differences in Contrast-Enhanced Magnetic Resonance Imaging after Acute Myocardial Infarction. *Int J Cardiovasc Imaging*. 2012 Oct 9. [Epub ahead of print]
- Frost RJA, Sonne C, Wehr U, Stempfle H-U. Effects of calcium supplementation on bone loss and fractures in congestive heart failure. *Eur J Endocrinol* 2007;156:309-14

### Reviews

- Sonne C. Diagnosis and conservative therapy of tricuspid insufficiency. *CardioVasc* 02/2016
- Sonne C. Heart Failure: future perspectives. *CardioVasc* 02/2015
- Sonne C, Stempfle HU, Klauss V, Schiele TM. Intravascular ultrasound-guided percutaneous coronary intervention in a human immunodeficiency virus-positive patient with cocaine-associated acute myocardial infarction: Case report and review. *Heart Lung Circ* 2005;14:197-200
- Seyfarth M, Sonne C, Schömig A. News in Cardiology. *Bayerisches Ärzteblatt* 2008;10:592-596

### Points of interest

Dr. Sonne has great interest and broad clinical expertise in all aspects of modern cardiology, including the diagnostic and interventional therapy of coronary and structural heart disease.

#### Major interests:

- Heart failure
- Treatment and interventional therapy of coronary artery disease: Coronary Angioplasty and Stenting (Balloon dilatation of the coronary arteries along with stent deployment)
- Interventional therapy of structural heart diseases (Trans-Catheter Aortic Valve Implantation, TAVI and interventional therapy of mitral valve insufficiency: Mitral Valve Clipping)