CURRICULUM VITAE

Prof. Dr. med. Alexander Assmann, MHBA

Date of birth: May the 3rd, 1981 in Fürstenfeldbruck, Germany
alexander.assmann@med.uni-duesseldorf.de

Study:

2001 - 2007	Study of medicine at the University of Düsseldorf, Germany
2002 - 2007	Stipendiary of the German National Merit Foundation
2007	Medical state examination (grade *excellent*)
2019 - 2021	Master of Health Business Administration at the University of Erlangen-Nürnberg, Germany MHBA thesis "Modern approaches to hospital benchmarking" (grade *excellent*)

Work:

2007 - 2015	Resident in cardiac surgery in the Department of Cardiovascular Surgery, University of Düsseldorf
2013 - 2014	Postdoctoral research fellow at the Biomaterials Innovation Research Center, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, USA, and the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, USA
2014 - 2018	Affiliated collaborator of the Biomaterials Innovation Research Center, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, USA
Since 2015	Attending cardiac surgeon in the Department of Cardiovascular Surgery, University of Düsseldorf Clinical proctor for endoscopic vessel preparations
2016	Additional qualification in intensive care medicine
Since 2019	Head of Coronary Bypass Surgery in the Department of Cardiac Surgery, University of Düsseldorf
Since 2021	Professor at the University of Düsseldorf, Germany
Since 2022	Senior Consultant of the Department of Cardiac Surgery, University of Düsseldorf

Operative foci:

Minimally invasive & endoscopic cardiac surgery
Off-pump coronary bypass surgery
Multi-arterial revascularization
MIDCAB and MultiVessel-(BITA)-MICS

Dissertation:

2008 Doctorate in medicine with the thesis "Intracoronary transplantation of HUVECS in the rat myocardium: Feasibility and cell destiny" (Institute of Heart and Circulatory Physiology, University of Düsseldorf; grade *summa cum laude*)

Habilitation:

2015 *Habilitation* (*Venia legendi*) with the thesis "Optimization of the biocompatibility of cardiovascular implants in a standardized rat model" (Experimental → Cardiac Surgery, Medical Faculty, University of Düsseldorf)

Scientific foci:

Cardiovascular biomaterials/ Regenerative medicine
Coronary surgery
Computational fluid dynamics in the cardiovascular system
Extracorporeal circulation

Publications – Overview:

Original articles:	55	Guideline articles:	13
Cumulative impact factor:	312	Review articles:	14
H-Index:	21	Books (as editor & author):	6

(for details, please see the attached publication list)

Awards:

2014 Ulrich Karsten Scientific Award (by the German Society for Thoracic and Cardiovascular Surgery)
2015 Edens Award for Heart and Circulatory Research (by the Eberhard Igler Foundation)
2016 Vascular Surgical Research Award (by the German Society for Thoracic and Cardiovascular Surgery)

Memberships:

German Society for Thoracic and CardioVascular Surgery
- Executive committee of the Working Group for ECC and Mechanical Circulatory Support
- Executive committee for the national interdisciplinary AWMF-S3 guideline on ECLS therapy
- Member of the Working Group for Coronary Artery Disease

European Association for Cardio-Thoracic Surgery
International Society of Coronary Artery Surgery
Heart Valve Society
Tissue Engineering and Regenerative Medicine International Society
The CardioThoracic Surgery Network

Original articles:

1. Annabi N, Shin SR, Tamayol A, Miscuglio M, Afshar M, **Assmann A**, Mostafalu P, Sun JY, Mithieux S, Cheung L, Tang XS, Weiss AS, Khademhosseini A. Highly elastic and conductive human-based protein hybrid hydrogels. **Adv Mater**. 2016; 28(1):40-49.
2. Zhang YN, Avery RK, Vallmajo-Martin Q, **Assmann A**, Vegh A, Memic A, Olsen BD, Annabi N, Khademhosseini A. A Highly Elastic and Rapidly Crosslinkable Elastin-Like Polypeptide-Based Hydrogel for Biomedical Applications. **Adv Funct Mater**. 2015; 25(30):4814-4826.
3. Annabi N, Zhang YN, **Assmann A**, Vegh A, Cheng G, Dehghani B, Lassaletta A, Gangadharan S, Weiss AS, Khademhosseini A. Engineering a highly elastic human protein-based sealant for surgical applications. **Sci Transl Med**. 2017; 9(410). pii: eaai7466.
4. Gaharwar AK, Avery RK, **Assmann A**, Paul A, McKinley GH, Khademhosseini A, Olsen BD. Shear-Thinning Nanocomposite Hydrogels for the Treatment of Hemorrhage. **ACS Nano**. 2014; 8(10):9833-9842.
5. **Assmann A**, Vegh A, Ghasemi-Rad M, Bagherifard S, Cheng G, Sani ES, Ruiz-Esparza GU, Noshadi I, Lassaletta AD, Gangadharan S, Tamayol A, Khademhosseini A, Annabi N. A highly adhesive and naturally derived sealant. **Biomaterials**. 2017; 140:115-127.
6. **Assmann A**, Zwirnmann K, Heidelberg F, Schiffer F, Horstkötter K, Munakata H, Gremse F, Barth M, Lichtenberg A, Akhyari P. The degeneration of biological cardiovascular prostheses under pro-calcific metabolic conditions in a small animal model. **Biomaterials**. 2014; 35(26):7416-7428.
7. **Assmann A**, Delfs C, Munakata H, Schiffer F, Horstkötter K, Huynh K, Barth M, Stoldt VR, Kamiya H, Boeken U, Lichtenberg A, Akhyari P. Acceleration of autologous in vivo recellularization of decellularized aortic conduits by fibronectin surface coating. **Biomaterials**. 2013; 34(25):6015-6026.
8. Masoumi N, Annabi N, **Assmann A**, Larson BL, Hjortnaes J, Alemdar N, Kharaziha M, Manning KB, Mayer JE, Khademhosseini A. Tri-layered elastomeric scaffolds for engineering heart valve leaflets. **Biomaterials**. 2014; 35(27):7774-7785.
9. Burghoff S, Ding Z, Gödecke S, **Assmann A**, Wirrwar A, Buchholz D, Sergeeva O, Leurs C, Hanenberg H, Müller HW, Bloch W, Schrader J. Horizontal gene transfer from human endothelial cells to rat cardiomyocytes after intracoronary transplantation. **Cardiovasc Res**. 2008; 77(3):534-543.
10. Paul A, Manoharan V, Krafft D, **Assmann A**, Uquillas JA, Shin SR, Hasan A, Hussain MA, Memic A, Gaharwar A, Khademhosseini A. Nanoengineered biomimetic hydrogels for guiding human stem cell osteogenesis in three dimensional microenvironments. **J Mater Chem B Mater Biol Med**. 2016; 4:3544-3554.
11. Schaal NK, **Assmann A**, Rosendahl J, Mayer-Berger W, Icks A, Ullrich S, Lichtenberg A, Akhyari P, Heil M, Ennker J, Albert A. Health-related quality of life after heart surgery - Identification of high-risk patients: A cohort study. **Int J Surg**. 2020; 76:171-177.
12. Albert A, Ennker J, Hegazy Y, Ullrich S, Petrov G, Akhyari P, Bauer S, Uerer E, Ennker IC, Lichtenberg A, Priss H, **Assmann A**. Implementation of the aortic no-touch technique to reduce stroke after off-pump coronary surgery. **J Thorac Cardiovasc Surg**. 2018; 156(2):544-554.e4.
13. Hoffmann T, **Assmann A*^{corr}**, Dierksen A, Roussel E, Ullrich S, Lichtenberg A, Albert A, Sixt S. A role for very low-dose recombinant activated factor VII in refractory bleeding after cardiac surgery: Lessons from an observational study. **J Thorac Cardiovasc Surg**. 2018; 156(4):1564-1573.e8.
14. **Assmann A**, Schmidt V, Lepke C, Sugimura Y, Assmann AK, Barth M, Lichtenberg A, Akhyari P. Degeneration of biological heart valve grafts in a rat model of superoxide dismutase-3 deficiency. **FASEB J**. 2022; 36(11):e22591.
15. Benim AC, Nahavandi A, **Assmann A**, Schubert D, Feindt P, Suh SH. Simulation of blood flow in human aorta with emphasis on outlet boundary conditions. **Appl Math Modell**. 2011; 35(7):3175-3188.
16. **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Ensminger S, Boeken U. Use of extracorporeal circulation (ECLS/ECMO) for cardiac and circulatory failure -A clinical practice Guideline Level 3. **ESC Heart Fail**. 2022; 9(1):506-518.
17. Sugimura Y, Katahira S, Immohr MB, Sipahi NF, Mehdiani A, **Assmann A**, Rellecke P, Tudorache I, Westenfeld R, Boeken U, Aubin H, Lichtenberg A, Akhyari P. Initial experience covering 50 consecutive cases of large Impella implantation at a single heart centre. **ESC Heart Fail**. 2021; 8(6):5168-5177.
18. Nagy E, Lei Y, Martínez-Martínez E, Body SC, Schlotter F, Creager M, **Assmann A**, Khabbaz K, Libby P, Hansson GK, Aikawa E. Interferon-γ Released by Activated CD8+ T Lymphocytes Impairs the Calcium Resorption Potential of Osteoclasts in Calcified Human Aortic Valves. **Am J Pathol**. 2017; 187(6): 1413-1425.
19. Chekhoeva A, Nakanishi S, Sugimura Y, Toshmatova M, Assmann AK, Lichtenberg A, Akhyari P, **Assmann A**. Dichloroacetate inhibits the degeneration of decellularized cardiovascular implants. **Eur J Cardiothorac Surg**. 2021; 61(1):19-26.

20. Assmann AK, Winnicki V, Sugimura Y, Chekhoeva A, Barth M, **Assmann A**, Lichtenberg A, Akhyari P. Impact of PPAR-gamma activation on the durability of biological heart valve prostheses in hypercholesterolaemic rats. **Eur J Cardiothorac Surg**. 2022; 63(1):ezad005. doi: 10.1093/ejcts/ezad005.
21. Boeken U, **Assmann A**, Mehdiani A, Akhyari P, Lichtenberg A. Open chest management after cardiac operations: outcome and timing of delayed sternal closure. **Eur J Cardiothorac Surg**. 2011; 40(5):1146-1150.
22. **Assmann A**, Struß M, Schiffer F, Heidelberg F, Munakata H, Timchenko EV, Timchenko PE, Kaufmann T, Huynh K, Sugimura Y, Leidl Q, Pinto A, Stoldt VR, Lichtenberg A, Akhyari P. Improvement of the in vivo cellular repopulation of decellularized cardiovascular tissues by a detergent-free, non-proteolytic, actin-disassembling regimen. **J Tissue Eng Regen Med**. 2017; 11(12):3530-3543.
23. Iijima M, Aubin H, Steinbrink M, Schiffer F, **Assmann A**, Weisel RD, Matsui Y, Li RK, Lichtenberg A, Akhyari P. Bio-active coating of decellularized vascular grafts with a temperature-sensitive VEGF-conjugated hydrogel accelerates autologous endothelialization in vivo. **J Tissue Eng Regen Med**. 2018; 12(1):e513-e522.
24. Sugimura Y, Chekhoeva A, Oyama K, Nakanishi S, Toshmatova M, Miyahara S, Barth M, Assmann AK, Lichtenberg A, **Assmann A*[corr]**, Akhyari P. Controlled autologous recellularization and inhibited degeneration of decellularized vascular implants by side-specific coating with stromal cell-derived factor 1α and fibronectin. **Biomed Mater**. 2020; 15(3):035013.
25. Toshmatova M, Nakanishi S, Sugimura Y, Schmidt V, Lichtenberg A, **Assmann A*[corr]**, Akhyari P. Influence of laminin coating on the autologous in vivo recellularization of decellularized vascular prostheses. **Materials** (Basel). 2019; 12(20). pii: E3351. doi: 10.3390/ma12203351.
26. **Assmann A**, Heke M, Kröpil P, Ptok L, Hafner D, Ohmann C, Martens A, Karluß A, Emmert MY, Kutschka I, Sievers HH, Klein HM. Laser-Supported CD133+ Cell Therapy in Patients with Ischemic Cardiomyopathy: Initial Results from a Prospective Phase I Multicenter Trial. **PLoS One**. 2014 Jul 7;9(7):e101449.
27. Minol JP, Reinsch I, Luik M, Leferink A, Barth M, **Assmann A**, Lichtenberg A, Akhyari P. Focal induction of ROS-release to trigger local vascular degeneration. **PLoS One**. 2017; 12(6):e0179342.
28. Timchenko EV, Timchenko PE, Lichtenberg A, **Assmann A**, Aubin H, Akhyari P, Volova LT, Pershutkina SV. Assessment of decellularization of heart bioimplants using a Raman spectroscopy method. **J Biomed Opt**. 2017; 22(9):91511.
29. **Assmann A**, Horstkötter K, Munakata H, Schiffer F, Delfs C, Zwirnmann K, Barth M, Akhyari P, Lichtenberg A. Simvastatin does not diminish the in vivo degeneration of decellularized aortic conduits. **J Cardiovasc Pharmacol**. 2014; 64(4):332-342.
30. Assmann AK, Goschmer D, Sugimura Y, Chekhoeva A, Barth M, **Assmann A**, Lichtenberg A, Akhyari P. A Role for Peroxisome Proliferator-Activated Receptor Gamma Agonists in Counteracting the Degeneration of Cardiovascular Grafts. **J Cardiovasc Pharmacol**. 2021; 79(1):e103-e115. doi: 10.1097/FJC.0000000000001150.
31. **Assmann A**, Gül F, Benim AC, Joos F, Akhyari P, Lichtenberg A. Dispersive aortic cannulas reduce aortic wall shear stress affecting atherosclerotic plaque embolization. **Artif Organs**. 2015; 39(3):203-211.
32. Benim AC, Frank T, **Assmann A**, Lichtenberg A, Akhyari P. Computational investigation of hemodynamics in hardshell venous reservoirs: A comparative study. **Artif Organs**. 2020; 44(4):411-418.
33. Sugimura Y, Schmidt AK, Lichtenberg A, **Assmann A*[corr]**, Akhyari P. A Rat Model for the In Vivo Assessment of Biological and Tissue-Engineered Valvular and Vascular Grafts. **Tissue Eng Part C Methods**. 2017; 23(12):982-994.
34. Aubin H, Mas-Moruno C, Iijima M, Schütterle N, Steinbrink M, **Assmann A**, Gil J, Lichtenberg A, Pegueroles M, Akhyari P. Customized interface biofunctionalization of decellularized extracellular matrix: towards enhanced endothelialization. **Tissue Eng Part C Methods**. 2016; 22(5):496-508.
35. Munakata H, **Assmann A**, Poudel-Bochmann B, Horstkötter K, Kamiya H, Okita Y, Lichtenberg A, Akhyari P. Aortic conduit valve-model with controlled moderate aortic regurgitation in rats: A technical modification to improve short- and long-term outcome and to increase the functional results. **Circ J**. 2013; 77(9):2295-2302.
36. Zhu E, Westenfeld R, Gastl M, Bönner F, **Assmann A**, Nia AM, Kelm M, Jung C. Acute chest pain in a triathlete: rupture of the noncoronary sinus of Valsalva into the right ventricle. **J Thorac Dis**. 2016; 8(10):E1199-E1201.
37. **Assmann A**, Benim AC, Gül F, Lux P, Akhyari P, Boeken U, Joos F, Feindt P, Lichtenberg A. Pulsatile extracorporeal circulation during on-pump cardiac surgery enhances aortic wall shear stress. **J Biomech**. 2012; 45(1):156-163.
38. **Assmann A**, Akhyari P, Delfs C, Flögel U, Jacoby C, Kamiya H, Lichtenberg A. Development of a growing rat model for the in vivo assessment of engineered aortic conduits. **J Surg Res**. 2012; 176(2):367-375.
39. Assmann AK, **Assmann A*[corr/shared 1st]**, Waßenberg S, Kojcici B, Schaal NK, Lichtenberg A, Ennker J, Albert A. The impact of socio-demographic factors on health-related quality of life after coronary artery bypass surgery. **Interdiscip Cardiovasc Thorac Surg**. 2023; 36(2):ivad014.
40. Assmann AK, Akhyari P, Demler F, Lichtenberg A, **Assmann A**. A magnetic resonance imaging-compatible small animal model under extracorporeal circulation. **Interact Cardiovasc Thorac Surg**. 2019; 29(4):612-614.
41. **Assmann A**, Minol JP, Mehdiani A, Akhyari P, Boeken U, Lichtenberg A. Cardiac surgery in nonagenarians: Not only feasible, but also reasonable? **Interact Cardiovasc Thorac Surg**. 2013; 17(2):340-343; discussion 343.
42. **Assmann A**, Boeken U, Klotz S, Harringer W, Beckmann A. Organization and Application of ECLS Therapy-A Nationwide

Survey in German Cardiosurgical Departments. **Thorac Cardiovasc Surg**. 2019; 67(3):164-169.

43. **Assmann A**, Boeken U, Feindt P, Schurr P, Akhyari P, Lichtenberg A. Vacuum-assisted wound closure is superior to primary rewiring in patients with deep sternal wound infection. **Thorac Cardiovasc Surg**. 2011; 59(1):25-29.
44. **Assmann A**, Boeken U, Feindt P, Schurr P, Akhyari P, Lichtenberg A. Heparin-induced Thrombocytopenia Type II after Cardiac Surgery: Predictors and Outcome. **Thorac Cardiovasc Surg**. 2010; 58(8):463-467.
45. **Assmann A**, Boeken U, Akhyari P, Lichtenberg A. Appropriate timing of coronary artery bypass grafting after acute myocardial infarction. **Thorac Cardiovasc Surg**. 2012; 60(7):446-451.
46. Boeken U, **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Ensminger S. S3 Guideline of Extracorporeal Circulation (ECLS/ECMO) for Cardiocirculatory Failure. **Thorac Cardiovasc Surg**. 2021; 69(S 04):S121-S212.
47. Katahira S, Sugimura Y, Mehdiani A, **Assmann A**, Rellecke P, Tudorache I, Boeken U, Aubin H, Lichtenberg A, Akhyari P. Coronary artery bypass grafting under sole Impella 5.0 support for patients with severely depressed left ventricular function. **J Artif Organs**. 2021 Jun 24. doi: 10.1007/s10047-021-01285-1. Online ahead of print.
48. Boeken U, Feindt P, Schurr P, **Assmann A**, Akhyari P, Lichtenberg A. Delayed Sternal Closure (DSC) After Cardiac Surgery: Outcome and Prognostic Markers. **J Card Surg**. 2011; 26(1):22-27.
49. Benim AC, Gül F, **Assmann A**, Akhyari P, Lichtenberg A, Joos F. Validation of loss-coefficient based outlet boundary conditions for simulating aortic flow. **J Mech Med Biol**. 2016; 16(1):1650011.
50. Boeken U, Minol JP, **Assmann A**, Mehdiani A, Akhyari P, Lichtenberg A. Readmission to the Intensive Care Unit in Times of Minimally Invasive Cardiac Surgery: Does Size Matter? **Heart Surg Forum**. 2014; 17(6):E296-E301.
51. Assmann AK, Lichtenberg A, **Assmann A**. Bilateral Internal Thoracic Artery Minimally Invasive CABG Management in COPD. **Thorac Cardiovasc Surg Rep**. 2022 Feb 2;11(1):e14-e16.
52. Saeed D, **Assmann A**, Abdeen M, Albert A, Maxhera B, Sadat N, Sixt S, Lichtenberg A. Implanting permanent left ventricular assist devices in patients on veno-arterial extracorporeal membrane oxygenation support. **Multimed Man Cardiothorac Surg**. 2016 Dec 9;2017. doi: 10.1510/mmcts.2016.003.
53. Klein HM, **Assmann A**, Lichtenberg A, Heke M. Intraoperative CD133+ cell transplantation during coronary artery bypass grafting in ischemic cardiomyopathy. **Multimed Man Cardiothorac Surg**. 2010(0809):3947.
54. Benim AC, Gül F, Nahavandi A, **Assmann A**, Feindt P, Joos F. Computational analysis of blood flow in human aorta. **IJEMFS**. 2010; 2(4):233-242.
55. Ogunmuyiwa O, Rellecke P, Lichtenberg A, **Assmann A**. Muscular Mitral Chord Contribution to Left Ventricular Outflow Tract Obstruction in HOCM. **Thorac Cardiovasc Surg Rep**. 2019; 8(1):e18-e19.

Guideline articles:

1. **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Ensminger S, Boeken U. Use of extracorporeal circulation (ECLS/ECMO) for cardiac and circulatory failure -A clinical practice Guideline Level 3. ESC Heart Fail. 2022; 9(1):506-518.
2. Boeken U, **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Ensminger S. S3 Guideline of Extracorporeal Circulation (ECLS/ECMO) for Cardiocirculatory Failure. Thorac Cardiovasc Surg. 2021; 69(S 04):S121-S212.
3. Boeken U, **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Ensminger S. Extracorporeal Circulation (ECLS/ECMO) for Cardio-circulatory Failure-Summary of the S3 Guideline. Thorac Cardiovasc Surg. 2021; 69(6):483-489.
4. **Assmann A**, Beckmann A, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog CS, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak

C, Ensminger S, Kelm M, Boeken U. Empfehlungen der S3-Leitlinie (AWMF) Einsatz der extrakorporalen Zirkulation (ECLS/ECMO) bei Herz- und Kreislaufversagen. Aktuelle Kardiol. 2022; 11(04):358-366.

5. Boeken U, Ensminger S, **Assmann A**, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog C, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Beckmann A. [Use of extracorporeal circulation (ECLS/ECMO) for cardiac and circulatory failure : Short version of the S3 guideline]. Anaesthesist. 2021; 70(11):942-950.
6. Boeken U, Ensminger S, **Assmann A**, Schmid C, Werdan K, Michels G, Miera O, Schmidt F, Klotz S, Starck C, Pilarczyk K, Rastan A, Burckhardt M, Nothacker M, Muellenbach R, Zausig Y, Haake N, Groesdonk H, Ferrari M, Buerke M, Hennersdorf M, Rosenberg M, Schaible T, Köditz H, Kluge S, Janssens U, Lubnow M, Flemmer A, Herber-Jonat S, Wessel L, Buchwald D, Maier S, Krüger L, Fründ A, Jaksties R, Fischer S, Wiebe K, Hartog C, Dzemali O, Zimpfer D, Ruttmann-Ulmer E, Schlensak C, Kelm M, Beckmann A. [Use of extracorporeal circulation (ECLS/ECMO) for cardiac and circulatory failure : Short version of the S3 guideline]. Med Klin Intensivmed Notfmed. 2021; 116(8):678-686.
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