

Application for Hosting EACTA Cardiothoracic and Vascular Anaesthesia Fellowship Programme

1. Fellowship Information

Basic Fellowship in Cardiothoracic and Vascular Anaesthesia	
Advanced Fellowship in Cardiothoracic and Vascular Anaesthesia	

2. Institution Name

Institute of Anaesthesiology, Heart and Diabetes Center Bad Oeynhausen, Ruhr-University Bochum, Germany

Address

Georgstrasse 11, 32545 Bad Oeynhausen, Germany, vwendossow@hdz-nrw.de; Tel.-Nr: +495731971128

Website

Country

Germany City Bad Oeynhausen

3. Chair Name

First name Vera Last name von Dossow

4. Programme Director

Email vwendossow@hdz-nrw.de Phone 4.95732E+11

First name Vera Last name von Dossow

Board Certification(s)

Title/Affiliation Univ.-Prof. Dr.

Number of original publications 78

EACTA membership Yes If yes, membership's number 102203

ESA membership Yes If yes, membership's number 1801501

Societies membership Yes If yes, membership's number DGAI

Email vwendossow@hdz-nrw.de Phone 4.95732E+11

Mailing Address Institute of Anaesthesiology, Heart and Diabetes Fax

Street Georgstrasse 11

Country Germany Region

Zip code 32545 Bad Oeynhausen

Will the Programme director devote sufficient time to provide substantial leadership to the programme and supervision for the fellows?

Yes

Will the Programme director review the fellows' clinical experience logs at least quarterly and verify completeness and accuracy?

Yes

Does the national/international regulatory authority(s) recognize the institutional CTVA Fellowship Programme?

No If yes, please explain

Completion of the programme will be acknowledged by the Department of Anaesthesia and Intensive Care at the host centre in junction with European Association of Cardiothoracic Anaesthesia (EACTA) Candidate's requirements

Yes

5. Candidate's requirements

The candidates must be board certified or board eligible according to European residency programme standards

Yes

Language requirements

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Comments

Candidates for the fellowship program should have finished their residency training. The fellow must be board certified or board eligible according to European res

Specific requirements towards the attending fellow

6. General Programme Information

Aims, goals and objectives of the Fellowship Programme

The OWL Fellowship programme has been restructured according to the published EACTA-curriculum see the attached new HDZ-Fellowship-Programme. Please see the attached programme

Preferred Duration

\* Of note, the training period should not be interrupted by frequent and/or prolonged periods of secondment to other divisions / departments.

Preferred Programme Training

Start	July	1	End	June	31
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Number of Positions Per Year

4	Type of fellowship training available	Clinical / Basic Research
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If clinical, will the fellows be allowed to work with the patients under supervision

Yes

Comments Our center was accredited in March 2019. Due to high requests for the EACTA-fellowship training we kindly ask to increase the fellow-positions up to 2 for basic and 2 for advanced per year. WE he

Offered Advanced Training

Yes

7. Faculty

CTVA Anaesthesia Faculty - Research Interest and/or Clinical Expertise. \* Please, list at least three names.

Name	EACTA member	Certification in Cardiothoracic and Vascular Anaesthesia	Additional Qualifications	Email address	Contact address
Vera von Dossow	Yes	yes	Intensive Care	vwendossow@hdz-nrw.de	Institute of anaesthesiology, Heart and Diabetescentre Bad Oeynhausen, address see above
Ninos George	Yes	yes	EACVI-TEE	ngeorge@hdz-nrw.de	Institute of anaesthesiology, Heart and Diabetescentre Bad Oeynhausen, address see above
Dora Papp	Yes	yes	EACVI-TEE	dpapp@hdz-nrw.de	Institute of anaesthesiology, Heart and Diabetescentre Bad Oeynhausen, address see above
Andreas Koster	Yes	yes	Congenital	akoster@hdz-nrw.de	Institute of anaesthesiology, Heart and Diabetescentre Bad Oeynhausen, address see above
Dietrich Henzler	No		Intensive Care	dietrich.henzler@ruhr-uni-bochum.de	Herford Hospital, Ruhr-Universität Bochum
Matthias Emmerich	No		Intensive Care		Bad Oeynhausen Hospital, Ruhr- Universität Bochum
Peter Zahn	No		Intensive Care		Bergmannsheil Klinikum BG, Ruhr Universität Bochum
	Yes / No				
	Yes / No				
	Yes / No				
	Yes / No				
	Yes / No				
	Yes / No				
	Yes / No				

Publications lists of the faculty's members in PubMed

- von Dossow V, Welte M, Zaune U, Martin E, Walter M, Rückert J, Kox WJ, Spies CD. Thoracic epidural anesthesia combined with general anesthesia: the preferred anesthetic technique for thoracic surgery. Anesth Analg 2001; 92: 848-54
- von Heymann C, Langenkamp J, Dubisz N, von Dossow V, Schaffartzik W, Kern H, Kox WJ, Spies CD. Posttraumatic immune modulation in chronic alcoholics is associated with multiple organ dysfunction syndrome. J Trauma 2001; 52: 95-103
- Wauer H, Groll G, von Dossow V, Mäding K, Becker G, Lachmann B, Kox WJ. Experimental results of the „open-lung concept“ Anaesthesiol Reanim 2002;27:32-7
- von Dossow V, Schilling C, Beller S, Vargas Hein O, von Heymann C, Kox WJ, Spies CD. Altered immune parameters in chronic alcoholic patients at the onset of infection and of early septic shock. Critical Care 2004; 8: R312-321

5. Spies CD, von Dossow V, Jentschman G, El-Hilali R, Ebert J, Fischer M, Schröder T, Höflich C, Sinha P, Paschen C, Mirsalim P, Brunsch R, Hopf J, Marks C, Wernecke KD, Pragst F, Ehrenreich H, Müller C, Tonnesen H, Oelkers W, Rohde W, Stein C, Kox WJ. Altered cell-mediated immunity and increased postoperative infection rate in chronic alcoholic patients. *Anesthesiology* 2004; 100:1088-100

6. Vargas Hein O, Misterek K, Tessmann JP, von Dossow V, Krimpove M, Spies CD. Time course of endothelial damage in septic shock: prediction of outcome. *Crit Care* 2005; 9: R307-314

7. Sander M, von Heymann C, Foer A, von Dossow V, Grosse J, Dushe S, Konertz WF, Spies CD. Pulse contour analysis after normothermic cardiopulmonary bypass in cardiac surgery patients. *Crit Care* 2005; 9:R729-34

8. von Dossow V, Rothard K, Wauer H, Redlich U, Vargas Hein O, Kox WJ, Spies CD. Circulating immune parameters predicting the progression of hospital-acquired pneumonia to septic shock. *Critical Care* 2005; 9: R662-669

9. Spies CD, Eggers V, Szabo G, Lau A, von Dossow V, Schoenfeld H, Althoff H, Hegenscheid K, Bohm B, Schroeder T, Pfeiffer S, Ziemer S, Paschen C, Klein M, Marks C, Miller P, Sander M, Wernecke KD, Achterberg E, Kaisers U, Lenzenhuber F, Volk HD. Intervention at the level of the neuroendocrine-immune axis and postoperative pneumonia rate in long-term alcoholics. *Am J Respo Crit Care Med* 2006; 174:408-14

Check if each of the following is available at the host centre.

Resources	Yes / No	Number
Total cardiothoracic and vascular ward beds	Yes	1
Number of ICU beds dedicated to CTV patients	Yes	
Is there an emergency department in which cardiothoracic patients are managed 24 hours a day?	No	
An adequately designed and equipped post-anaesthesia care unit for cardiothoracic patients located near the operating room suite?	Yes	4
Is there monitoring and advanced life support equipment representative of current levels of technology?	Yes	7
Hybrid Operating Rooms	Yes	2
Cardiac Operating Rooms	Yes	7
Thoracic Operating Rooms	Yes	1
Vascular Operating Rooms	Yes	1
Catheterisation Labs	Yes	5
Electrophysiology Labs	Yes	3
Pulmonology Labs	Yes	1
Interventional Vascular Suits	Yes	1
Separate CIVICU Facility	Yes	1
Animal Laboratory for research purposes	Yes	1
Outpatient clinic for perioperative evaluation of patients undergoing cardiothoracic and vascular procedures	Yes	1
24-hours acute pain service available for patients undergoing cardiac, thoracic and vascular procedures	No	7
Meeting Rooms	Yes	7
Classrooms with visual and other educational aids	Yes	7
Study areas for fellows	Yes	2
Office space for faculty members and fellows	Yes	7
Diagnostic facilities	Yes	7
Therapeutic facilities	Yes	7
24-hour laboratory services available in the hospital	Yes	7
Cardiac stress testing	Yes	1
Cardiopulmonary scanning procedures	Yes	1
Pulmonary function testing	Yes	1
Computers and IT support	Yes	7
Appropriate on-call facilities for men and women	Yes	7

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70

### 9. Clinical Skills and Responsibilities

Will your Programme offer a 12-24 months of fellowship education in fundamental clinical skills of medicine relevant to the practice of CTVA?

If yes, for each rotation or experience below, specify the duration (in months, four weeks = one month) during the 12-24 months of education in fundamental clinical skills.

Caring for inpatients in	Number of performed produces/year
Cardiac Surgery using CPB	2000
Cardiac Surgery without CPB	2000
Minimally-Invasive Cardiac Procedures	500
Interventional Cardiac Catheterization (e.g. TAVI, Mitraclip, ASD)	800
Electrophysiology Lab (e.g. mapping, ablation, pacemakers, ICDs)	500
Robotic Cardiac Surgery	0
Heart, Lung, and Heart/Lung Transplants	90/10
ECLS, ECMO, VAD Procedures	200/200/110
Echocardiography Lab	2000
Thoracoscopic Surgery	100
Pulmonary Resection	50
Oesophageal Surgery	0
Tracheo-Bronchial Surgery	5
Interventional Pulmonology Procedures	0
Major Vascular Procedures	250
Neurological monitoring during major vascular surgery	200
Interventional Vascular Procedures	100
Acute and Chronic Pain Management for CTV patients	yes
Basic Research	yes
Clinical Research	yes
Rotations in	Number of performed produces/year
Cardiac anaesthesia	150 (7 month)
Thoracic anaesthesia	25 (1,5 month)
Anaesthesia for major supra-inguinal vascular procedures	20 (1 month)
Trans-oesophageal and trans-thoracic echocardiography	150 (0,5 month)
Medical or surgical Critical Care Rotation	3 month
Inpatient or outpatient cardiology	0,5 month
Inpatient or outpatient pulmonary medicine	optional
Extracorporeal perfusion technology (CPB, ECMO, Nova-Lung.)	0,5 month
Paediatric cardiothoracic anaesthesia	optional
Basic Research	no
Clinical Research	yes

Will all fellows entering the CTVA Programme complete each of the fundamental clinical skills of requirements?

If no, explain YES

In the clinical anaesthesia setting, including nights and weekends, will faculty members at any time direct perioperative CTVA care, involving fellows, for more than two anaesthetizing locations simultaneously?

If Yes, describe NO

Clinical Responsibility

List any other rotations (along with their duration, in months) offered in the Programme to augment fellows' learning.

Will advanced subspecialty rotations reflect increased responsibility and learning opportunities?	No
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Maximum Time in Non-Clinical Activities	Depending on the fellow and his/her research interest
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**10. Financial Statement**

An employment contract will be signed with the candidate	Yes
Accommodation options are provided	No
Transportation/travel options are provided	No
Monthly Salary	5658.97
Amount	Currency
This opportunity is not funded by the centre	No
Source of financial support for the candidate:	Host centre (monthly salary)
Others	Depending on the candidate. With German approbation and completing residency in anesthesiology, a two-year contract for the fellowship-program

**11. Educational and Academic Programme**

**Didactic Sessions**

Will faculty members' attendance be monitored?	Yes
Will fellows' attendance be monitored?	Yes
Will attendance be mandatory for faculty members?	Yes
Will attendance be mandatory for fellows?	Yes
Who of the following will provide content at conferences? Check all that apply.	Yes
Anaesthesiology faculty members from this department	Yes
Anaesthesiology faculty members from other sites	Yes
Non-anaesthesiologists from the primary clinical site	No
Non-anaesthesiologists from the participating sites	No
Visiting faculty members	No
Drug/industry representatives	No
Fellows	Yes
Others (specify): Click here to enter text.	

What will be the frequency of the following educational topics in the programme's schedule?
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	Weekly	Bi-weekly	Monthly	Quarterly	Semi-annually	Annually
Critical care appraisal of the literature (i.e., journal club)	Yes	No	No	No	No	No
Quality improvement (M&M, QA)	No	No	Yes	No	No	No
Board review (e.g., oral exams, keywords)	No	No	No	Yes	No	No
Grand rounds	No	No	Yes	No	No	No
Other (specify) Click here to enter text.						

Formal Course Work Available in	2021 TTE and TTE course is offered also for fellows to participate free of charge. In addition all of our disciplines have in house courses , all of them are free of charge. Actually they are stopped due to CORONA.
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Extra-Institutional Educational Conference Support:	German work group " Cardiac Anesthesia " annual conference meeting
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In the Previous 5 Years, Fellows were 1st or 2nd Author On:

Abstracts	0	Peer-Reviewed Journal Articles	0
Book Chapters	0	Other Publications	0

Dedicated Research Time	during advanced /2-4 hours/week
In the Previous Year, Fellows present an oral or poster presentation in a national or international meeting	No

The Opportunity for Exchange with other training facilities	Yes
Patient Care	CanMEDS competency framework

Competency Area / Skills	Settings/ Activities	Assessment Method(s)
<b>I. Basic Training</b>		
<b>I. I. General patient assessment and risk estimation</b>		
Assessment of patients based on physical examination and history with use of appropriate laboratory tests and examinations. Level C	Daily premedication visit under supervision	Preoperative evaluation according to clinical standard operating procedure
Scores evaluation, e.g., physical status in accordance with American Society of Anesthesiologists (ASA). Level D	Daily premedication visit under supervision	Frailty assessment, cognitive test: Clock drawing test , functional assessment (Handgrip strength, Time up and go; Tinetti test)
Airway evaluation. Level C	According to national guidelines	Difficult airway management training
Interpretation and limitations of peri-operative monitoring, including invasive and non-invasive cardiac function tests, pulmonary function tests, blood gas analysis, common radiological imaging, coagulation tests, liver and renal function tests, endocrine function tests, and drug monitoring. Level C	Premedication visit, interdisciplinary conference daily	daily case presentations
Selection and planning of the individual anesthesia technique. Level C	Interactive case presentation	interactive case discussion with program director and faculty
Postponement or cancellation of surgery decision making. Level C	according to clinical standard operating procedures	Assessment Interview
Participation in multi-disciplinary (morbidity) conferences. Level C	monthly participation,	Assesment Interview
Pre-operative fasting, pre-medication and adaptation of pre-operative drug therapy. Level C	conference with pharmacologist	Therpeutic drug monitoring
<b>I. II. Anesthesia management – cardiac surgery</b>		
Workplace preparation following environmental safety measures and checklists. Level C	communication skills	TEAM TIME OUT, SBAR, CIRS
Use of technical and medical equipment, inclusive advanced hemodynamic monitoring, neuromonitoring, coagulation monitoring and basic peri-operative TEE. Level C	according to clinical standard operating procedures	Assessment Interview
Provision of safe induction, maintenance, and emergence from anesthesia. Level C	according to clinical standard operating procedures	daily direct observation of procedural skills
Defibrillation, cardioversion. Level D	Teaching of technical skills during first three month	daily direct observation of procedural skills
Transvenous pacemaker insertion and modes of action; use of a temporary pacemaker. Level C	Teaching of technical skills during first three month	daily direct observation of procedural skills
Central and peripheral venous (ultrasound-guided) access and peripheral arterial catheterization, pulmonary artery catheterization, arterial blood gas collection, and gastric tube insertion. Level D	Teaching of technical skills during first three month	daily direct observation of procedural skills
Blood salvage and transfusion. Level D	teaching during the first three month	daily direct observation

Organ systems and hemostasis homeostasis maintenance throughout cardiac surgery procedures. Level C	teaching during the first three month	daily direct observation of procedural				
Interpretation of point-of-care coagulation monitoring such as rotational thromboelastometry (ROTEM) and thromboelastography (TEG). Level C	teaching during first three month., clinical SOP	daily direct observation of procedural				
Management of patients on cardiopulmonary bypass. Level C	teaching during first month of the fellowship by direct supervisor	direct observation procedural skill				
Diagnosis and management of intraoperative critical incidents including. Level C - allergic reactions, anaphylaxis, - gas embolism, aspiration pneumonia and pneumothorax, - hypoxia, hypercarbia, hypoventilation, hyperventilation, high ventilator peak inspiratory pressures, - hypertension (systemic / pulmonary), hypotension, arrhythmias, myocardial ischemia, cardiac failure, cardiopulmonary resuscitation, - oliguria, anuria, - intra-operative blood gas and electrolyte disturbances, - intra-operative awareness, - adverse blood products transfusion reaction, - coagulopathy and excessive bleeding, - systemic inflammatory response syndrome (SIRS) / postoperative vasoplegic syndrome (PVS).	theoretical teaching during first three month of fellowship	Knowledge Assessment Interview				
Management of patient transport to and from the intensive care unit (ICU). Level C	practical teaching together with supervisor	direct observation procedural				
Consideration of ethical and medico-legal aspects. Level C	theoretical teaching during the fellowship, quarterly participation on ethic conference	Knowledge assessment interview				
<b>1. III. Anesthesia management – thoracic surgery</b>						
Bronchoscopic examination to verify the position of a lung-separation device and to confirm the correctness of the bronchus to be stapled and the patency of the other bronchi. Level C	Bronchoscopy simulation, theoretical part of thoracic anesthesia by monthly lectures, self-study	direct observation procedural skills: knowledge assessment interview				
Provision of safe induction, maintenance, and emergence from anesthesia in patients undergoing thoracic surgery of varying complexity, including airway management, the decision of which drug to use, one-lung ventilation technique, and management of intraoperative adverse events. Level C	Clinical teaching by supervisor, self-study	Knowledge Assessment Interview, direct observation procedural skills				
Management of most common peri-operative critical incidents and complications including: Level C - bronchospasm, - hypoxemia, hypercapnia, - pneumothorax, <b>- pulmonary hypertension</b>	Clinical teaching, interactive discussion with supervisor	Knowledge Assessment Interview, direct				
One-lung ventilation with a double-lumen tube. Level C	Clinical teaching by supervisor, self-study	Knowledge Assessment Interview,				
One-lung ventilation with other techniques (e.g., Arndt blocker, EZ blocker). Level B	Clinical teaching by supervisor, self-study	Knowledge Assessment Interview				
Postoperative pain management, including epidural and paravertebral analgesia. Level C	Clinical teaching, daily postanaesthesia visit	Knowledge Assessment Interview				
Additional techniques in pain management (e.g., epidural analgesia, truncal blocks, multimodal analgesic techniques). Level B	self-study, teaching by supervisor	Knowledge Assessment Interview				
<b>1. IV. Anesthesia management – major vascular surgery</b>						
Pre-operative assessment, risk stratification and medical management of vascular patients. Level D	Interactive case presentation , daily premedication visit	Knowledge Assessment Interview				
Provision of safe induction, maintenance, and emergence from anesthesia in patients undergoing vascular surgery of varying complexity, including airway management, the decision of which drug to use, hemodynamic management, and management of intraoperative adverse events. Level C	Clinical teaching by supervisor , daily examination	direct observation procedural skills				
Management of the most common perioperative critical incidents and complications including Level C - acute kidney injury, - neurological insults, <b>- paraplegia</b>	Clinical teaching, interactive discussion with supervisor	Knowledge Assessment Interview				
Management of elective and emergency open abdominal aortic aneurysms (AAA) and AAA repair. Level D	Clinical teaching, interactive discussion with supervisor	Knowledge Assessment Interview				
Management of carotid endarterectomy, angioplasty, or stenting. Level D	Clinical teaching, interactive discussion with supervisor	Knowledge Assessment Interview				
<b>1.V. Post-operative care/ Critical care</b>						
Physical examinations and patient assessment (e.g., respiratory and peristaltic sounds, temperature gradient capillary refill). Level D	Clinical teaching under supervision	Knowledge Assessment				
Applying sedation, general anesthesia, multimodal analgesia. Level D	daily examination under supervision, self-study	Knowledge Assessment				
Management of the airways, inclusive of emergency intubation. Level D	self-study, simulation emergency intubation	Knowledge Assessment				
Central venous, peripheral venous, arterial catheters, and pleural drains insertion using aseptic techniques. Level D	daily examination under supervision,	Assessment Interview				
Gastrointestinal tube insertion. Level D	daily examination under supervision	Assessment Interview				
Airway maneuvers inclusive of suction of endotracheal secretions, tracheotomy (percutaneous), bronchoalveolar lavage and sampling. Level D	daily examination under supervision, self-study	Assessment Interview				
Invasive ventilation including prone position ventilation and weaning strategies. Level D	daily examination under supervision, webinar	Assessment Interview				
Delivery of continuous positive pressure ventilation and non-invasive ventilation. Level D	theoretical interactive discussion, self-study	Assessment interview				
Hemodynamic stabilization and management, inclusive of pacing, cardioversion, defibrillation, advanced and basic life support, vasoactive and inotropic therapy, advanced cardio-vascular monitoring. Level B	daily examination under supervision, self-study					
Volemia management and fluids administration. Level D	theoretical interactive discussion, self-study	Assessment Interview				
Management of blood product transfusion and coagulopathies correction. Level D	theoretical interactive discussion	Knowledge Assessment Interview				
Renal replacement therapy and acute renal failure. Level B	theoretical interactive discussion, seminar, self-study	Assessment Interview				
Identification of relevant pre-existing co-morbidities. Level D	Interactive theoretical discussion with the instructor	Assessment Interview				
Responding to trends in physiological variables. Level D	theoretical interactive discussion, self-study	Assessment Interview				

Patient transportation inter- and intra-hospital. Level B	examination under supervision	Assessment Interview
Arterial and central venous line cannulation (ultrasound-guided). Level D	daily examination under supervision	Procedural observation practical skills
Myocardial infarction, pulmonary embolism, tamponade, hypovolemia. Level D	theoretical interactive discussion with instructor	Assessment Interview
Assessment of intravascular volume status. Level C	daily examination under supervision, self-study	Procedural observation practical skills
Recognition of substantial pericardial or pleural effusion. Level B	daily examination under supervision	Procedural observation practical skills
<b>1. VI. Basic peri-operative echocardiography</b>		
Basic levels of peri-operative TEE and lung and vessel ultrasonography as performed in the operating room. Level C	Clinical teaching with the instructor, self-study	TEE-Simulation, Knowledge Assessment Interview, TEE-Logbook
Performance of the recommended number of peri-operative echocardiography exam according to EACVI / EACTA certification guidelines. Level D	Clinical teaching with the instructor, self-study	Knowledge Assessment
<b>1. VII. Anesthesia management – interventional procedures in cardiology</b>		
Safe induction of, maintenance of, and emergence from anesthesia in patients undergoing interventional cardiac procedures, including the decision of which drug to use, ventilation techniques, management of airways and management of intraoperative adverse events. Level C	Daily examination under supervision	Knowledge Assessment, direct observation procedural skill
Sedation for invasive procedures in cardiology. Level D	monthly clinical conferences, theoretical interactive discussion with instructor	Knowledge Assessment, Logbook
Sedation and anesthesia outside the operating theatre, also considering the local organization and the specific patients and procedures. Level D	Anesthesia organization, operation management, theoretical interactive discussion with the instructor, process optimization, planning surgical procedures	Knowledge Assessment
<b>1. VIII. Extracorporeal perfusion management</b>		
Providing the theoretical background of extracorporeal circulation and associated subject areas, including: Level D - Anticoagulation monitoring and management. - Cardioprotective measures (cardioplegia, hypothermia). - Acid-base management (alpha-stat vs. pH-stat). - Management of complications, e.g. air entry, CPB failure.	please refer to ICU rotation, daily examination under supervision	Knowledge Assessment
<b>2. Advanced training</b>		
In cooperation with the local Program Director, after the completion of the basic training, the fellow can design the advanced training to include any or a combination of the following options.		
<b>2. I. Anesthesia management – cardiac surgery</b>		
Clinical management of patients with pericardial diseases. Level D	monthly conferences, theoretical interactive discussion with instructor, self-study	Knowledge Assessment
Management of cardiomyopathy patients and of those with congenital and acquired valvular heart disease, electrophysiological disturbances, congenital heart disease, heart failure, infectious and neoplastic cardiac diseases. Level D	daily examination under supervision during rotation	Knowledge Assessment
<b>2. II. Anesthesia management – thoracic surgery (as described previously, as well as the followings:)</b>		
Alternative ventilation techniques in thoracic surgery (e.g., jet ventilation). Level D	techniques of fiberoptic bronchoscopy, jet ventilation, self study, interactive discussion with instructor	Knowledge Assessment
Principles of postoperative chronic pain management. Level D	during thoracic rotation	Knowledge Assessment
<b>2. III. Anesthesia management – major vascular surgery (as described previously, as well as the followings:)</b>		
The use of rapid ventricular pacing (RVP) during deployment of the stent for TEVAR. Level B	daily examination under supervision during rotation	Direct observation procedural skill
Pain management for patients undergoing vascular procedures. Level B	self-study, daily examination under supervision	Direct observation procedural skill
Anesthesia for peripheral vascular procedures. Level C	monthly clinical conference, self-study, standard operating procedure	Assessment Interview
Care of patients undergoing limb amputation. Level D	daily examination under supervision	Assessment Interview
Pain management, with particular reference to critical limb ischemia. Level B	as mentioned before	Assessment Interview
<b>2.IV. Post-operative management/ Critical care (as described previously, as well as the followings:)</b>		
Interpretation of invasive and non-invasive cardiovascular monitoring. Level D	please see ICU rotation of the fellowship program,	Assessment Interview
Use of inotropes and vasodilators. Level D	daily examination under supervision, self-study, clinical conference	Knowledge Assessment Interview
Management of intra-aortic balloon counter pulsation and other mechanical circulatory support devices. Level C	daily examination under supervision, ICU interdisciplinary rounds	Knowledge Assessment Interview
Detection of problems occurring with extracorporeal circulation management. Level C	theoretical two-day session with perfusionist	Knowledge Assessment Interview
Anesthesia for procedures in intensive care, including emergency re-sternotomy, re-intubation, tracheostomy or cardioversion. Level D	daily examination under supervision, theoretical interactive	Assessment interview
Principles and management of chest drains. Level D	during ICU rotation, self-study	Direct observation procedural skill
<b>2. V. Advanced perioperative echocardiography (as described previously, as well as the followings:)</b>		
<b>2. VI. Heart and/or lung transplantation</b>		
Central venous pressure invasive arterial monitoring, pulmonary artery catheter insertion and interpretation. Level D	theoretical teaching in weekly conferences, practical examination under supervision	Assessment Interview
TEE for monitoring of left and right ventricular function and diagnosis of primary graft dysfunction / failure. Level C	daily examination under supervision of the TEE -instructor, self-study, case presentations	Direct observation procedural skill
Insertion and management of thoracic epidurals Level D	self-study, teaching by supervisor during optional rotation thoracic anesthesia	Assessment Interview
<b>2.VII. Organizational module</b>		
Communicating effectively with patients and their families. Level D	communication skill: theoretical training with the instructor, communication training with the HDZ medical psychologist (1 day)	direct observation procedural skill, premedication visit and postanesthesia visit
Communicating effectively with surgical colleagues. Level D	theoretical training, simulation of emergency situations together with surgeons and perfusionist	direct observation procedural skill during Weaning from CPB, Assessment Interview
Communicating with the intubated patient. Level D	theoretical training with video; Assessment of analgesedation, delirium screening (CAM-ICU) in the PACU	direct observation procedural skill, Assessment Interview
Recognizing the need for senior help. Level D	theoretical training emergency situations with the instructor,	360° evaluation, Assessment Interview
Maintaining accurate clinical records. Level D	Instruction in the electronic PDMS system, Copra/ORBIS/CIRS - Reporting	Assessment Interview
Presentations at departmental meetings. Level D	preparation of clinical case presentation, weekly conference,	direct observation,
Participation in multi-disciplinary clinical audits. Level C	Monthly M&M conference, case presentation	Assessment interview
Commitment to continued professional development. Level D	coaching by the program director, quarterly, leadership-teaching	Assessment interview
<b>2.VIII. Research module</b>		

Ability to help design a clinical or basic science research project or part of it as a member of the investigative team. Level D	preparation and planning together with program director	Presentation in clinical conference/congress meetings
Ability to help complete an ethics application. Level C	participation in an ethical case conference	written summary of the ethical case conference
Ability to discuss basic statistical approaches. Level C	theoretical interactive discussion with the program director	short communication abstract of retrospective design
Ability to consent, recruit, and follow up research participants according to regulatory frameworks. Level C	basic recommendation of GCP guidelines, involvement in clinical studies	Assessment Interview
Ability to help analyze data. Level C	Theoretical interactive discussion with the program director	Assessment Interview, descriptive data analysis, Mann Withney U, Fischer's Exact Test
Ability to contribute to disseminating study results in abstracts, presentations and publications. Level C	theoretical interactive discussion with the programm director	Preparing a Poster presentation for congress meeting

#### Medical Knowledge

Indicate the activity(ies) (lectures, conferences, journal clubs, clinical teaching rounds, etc.) in which residents will demonstrate knowledge in each of the following areas. Also indicate the method(s) used to assess competence.

Area of Knowledge	Settings/ Activities	Assessment Method(s)
<b>1. Basic Training</b>		
<b>1.1. General patient assessment and risk estimation (Level A)</b>		
Physiology of the heart, the circulatory system and the respiratory system. Basic knowledge of embryological development of cardiac, thoracic and vascular structures.	Clinical teaching round together with students from Ruhr-University Bochum	Knowledge Assessment Interview
Pre-operative invasive and non-invasive assessment of cardiac diseases and interpretation of results including electrocardiogram (ECG), chest X-ray, echo-cardiography, cardiac stress testing, coronary angiography, cardiac magnetic resonance imaging (CMRI), and computer tomography (CT).	Clinical teaching round together with students from Ruhr-University Bochum	Knowledge Assessment Interview
Pre-operative pulmonary evaluation and interpretation of the results, including arterial blood gas and acid-base analysis, pulmonary function tests, oximetry and thoracic imaging.	Clinical teaching round together with students from Ruhr-University Bochum	Knowledge assessment Interview
Patient information and informed consent including medico-legal aspects, appraisal of discernment and consent capacity.	Clinical teaching round together with students from Ruhr-University Bochum	Knowledge Assessment Interview
Principles of risk and outcome assessment and relevant scoring systems (e.g., EuroSCORE).	Clinical teaching round during premedication visit with instructor	Knowledge Assessment Interview
<b>1. II. Anesthesia management – cardiac surgery (Level A)</b>		
Knowledge of anesthetic agents and their effects on cardiac function and in patients with cardiac diseases.	Clinical teaching round with the instructor , self-study	Assessment Interview
Principles of intraoperative pharmacology and relevant medication, including positive inotropes, chronotropes, vasoconstrictors, vasodilators, and anti-arrhythmic agents.	self-study	Assessment Interview
Principles of patient blood management, including specific diagnostic tools, application of relevant medication and blood products.	clinical teaching round with the instructor , self-study	Knowledge Assessment Interview
Principles of basic hemodynamic monitoring and relevant techniques, such as arterial pressure measurement, central venous pressure.	clinical teaching round with the instructor , self-study	Assessment Interview
Principles of relevant neuromonitoring techniques (e.g., processed electro-encephalography (PEEG), near-infrared sonography (NIRS), somato-sensible evoked potentials (SSEP), motor evoked potentials (MEP).	self-study, monthly clinical conference,	Assessment Interview
Principles of conventional cardiopulmonary bypass techniques. Principles of myocardial preservation. Effects of cardiopulmonary bypass on human physiology, organ function, and pharmacology.	daily examination under supervision	Direct observation procedural skills
Basic principles of common procedures in cardiac surgery, such as coronary artery bypass grafting (CABG).	Daily examination under supervision, self-study	Assessment interview
<b>1. III. Anesthesia management – thoracic surgery (Level A)</b>		
Principles of pulmonary evaluation as described previously, and basic knowledge in the interpretation of results from pulmonary function tests, lung perfusion testing and CT.	theoretical interactive discussion with Instructor	Assessment Interview
Knowledge of the bronchial anatomy.	self-study	Knowledge Assessment Interview
Knowledge about relevant anesthetic agents and their effects in patients with lung diseases.	self-study, Webinar EACTA	Knowledge Assessment Interview
Principles of intraoperative pharmacology and relevant medication, including bronchodilators and steroids.	self-study, monthly clinical conference,	Knowledge Assessment Interview
Basic principles of common procedures in thoracic surgery (mediastinoscopy, video-assisted thoracoscopic surgery (VATS), open lung resection, pneumonectomy).	self-study, Webinar HDZ/Vienna	Assessment Interview
Basic principles of endoscopic pulmonary procedures, such as bronchial stenting and endoscopic lung volume reduction (ELVR).	theoretical seminar, pneumologist HDZ	Assessment Interview
<b>1. IV. Anesthesia management – major vascular surgery (Level A)</b>		
Knowledge of peri-operative management for vascular patients undergoing vascular interventions, including anesthetic choices, perioperative monitoring, and risk identification.	self-study, monthly clinical conference,	Assessment Interview
Basic principles of the peri-operative management of lumbar drainage for aortic interventional procedures.	self-study , theoretical interactive discussion	Assessment Interview
Basic principles of spinal cord protection during surgical and interventional aortic procedures.	self-study , during vascular rotation	Knowledge assessment Interview, Power Point presentation
Basic principles of neuromonitoring.	self-study, during vascular rotation	
<b>1. V. Post-operative care/ Critical care (Level A)</b>		
Scoring systems in the ICU (e.g. the Sequential Organ Failure Assessment (SOFA), the Simplified Acute Physiology Score (SAPS), the Confusion Assessment Method (CAM)-ICU).	see ICU rotation in the fellow-programm	
Etiology, pathophysiology, diagnosis and treatment plans / bundles according to international standards for specific critical conditions in cardiothoracic and vascular surgery patients.	according to clinical internal standard operating procedures	Assessment Interview, Logbook
Circulatory failure (heart failure, shock, cardiorespiratory arrest, cardiac arrhythmias, ischemic heart disease, pulmonary embolism, bleeding complications, vasoplegia).	according to clinical standard operating procedures ,	Assessment Interview, Logbook
Anaphylaxis.	during ICU rotation	Assessment Interview, Logbook
Respiratory failure, including adult respiratory distress syndrome (ARDS), pulmonary edema, pneumothorax, pneumonia.	during ICU rotation , daily examination under supervision	interdisciplinary grand rounds, intensive care visit, logbook
Acute kidney injury and failure.	during ICU Rotation , daily examination under supervision	interdisciplinary grand rounds, intensive care visit, logbook
Gastrointestinal failure, peritonitis, pancreatitis, liver failure, non-occlusive mesenteric ischemia (NOMI).	during ICU rotation, daily examination under supervision	Assessment Interview
Neurological failure (delirium and coma, cerebral ischemia and bleeding).	during ICU rotation, daily examination under supervision	Assessment Interview, logbook

Airway and chest injuries.	theoretical interactive discussion with the instructor	Knowledge Assessment Interview
Aortic injuries.	theoretical interactive discussion with the instructor	Knowledge Assessment Interview
Infectious diseases (systemic inflammatory response syndrome (SIRS) and sepsis, including sepsis bundle strategy).	during ICU rotation , daily examination under supervision	Knowledge Assessment Interview, Logbook
Coagulation disorders (disseminated intravascular coagulopathy (DIC), heparin resistance, heparin-induced thrombocytopenia, severe bleeding, transfusion reaction).	during ICU rotation, coagulation symposium	Knowledge Assessment Interview, Logbook
Equipment and apparatus (equipment design, physics, standards, limitations; e.g. non-invasive and invasive postoperative ventilation, continuous renal replacement therapy devices, non-invasive and invasive hemodynamic monitoring).	during ICU rotation , daily examination under supervision	Knowledge Assessment Interview, Logbook
Indication, contraindication, drug selection, complications: sedation, anesthesia, analgesia, neuromuscular relaxation, nutrition.	during ICU rotation, daily examination under supervision	Knowledge Assessment Interview, Logbook
Multimodal and pre-emptive analgesia concepts.	during ICU rotation, daily examination under supervision, self-study	Knowledge Assessment Interview
Weaning and extubation criteria.	during ICU rotation, daily examination under supervision, self-study	Knowledge Assessment Interview, logbook
Transfer and discharge criteria.	during ICU rotation, daily examination under supervision, self-study	Knowledge Assessment Interview
Indications for and application of extracorporeal circulation in intensive care patients for cardiac and / or respiratory support (e.g., ECMO).	during ICU rotation, daily examination under supervision, self-study	Knowledge Assessment Interview, Logbook
<b>1. VI. Basic peri-operative echocardiography (Level A)</b>		
Principles of basic theory of peri-operative cardiac echocardiography according to the European Association of Cardiovascular Imaging (EACVI) / EACTA process of certification for TEE.	Daily examination under supervision, self-study	TEE-Simulation, Knowledge Assessment Interview, TEE-Logbook
<b>1. VII. Anesthesia management – interventional procedures in cardiology (Level A)</b>		
Basic principles of common procedures in interventional cardiology, such as coronary angiography, ablation, transcatheter aortic valve replacement (TAVR), and mitral / tricuspid clipping with relevant complications.	Daily examination under supervision, self-study	Assessment Interview, Logbook
Procedural sedation guidelines from the European Board of Anaesthesiology (EBA)/ European Society of Anaesthesiology (ESA).	daily examination, self-study, monthly conferences, Tavi-Board conference participation	Assessment Interview, Logbook
Monitoring and capnography use according to the safety recommendations from EBA.	daily examination under supervision	
<b>1. VIII. Extracorporeal perfusion management (Level A)</b>		
Basic principles of extracorporeal perfusion.	theoretical interactive discussion with perfusionist	Assessment Interview
Types of extracorporeal circuits, e.g., cardiopulmonary bypass (CPB), extracorporeal membrane oxygenation (ECMO).	theoretical interactive discussion with perfusionist, monthly clinical conference	Assessment Interview
Types, composition and mechanisms of cardioplegic solutions.	theoretical interactive discussion with perfusionist, monthly clinical conference	Assessment Interview
Cardioprotective measures.	theoretical interactive discussion, self-study	Assessment Interview
Safety recommendations for extracorporeal circulation from the European Board of Cardiovascular Perfusion (EBCP).	self-study	Assessment Interview
<b>2. Advanced training</b>		
<b>2. I. Anesthesia management – cardiac surgery (Level A)</b>		
Principles of advanced hemodynamic monitoring and relevant techniques, such as use of the pulmonary artery catheter, continuous cardiac output monitoring and measurement.	daily examination under supervision	Assessment Interview, Logbook
Principles of modified cardiopulmonary bypass (minimized CPB, left-heart CPB) and the off-pump revascularization technique.	daily examination under supervision, self-study	Assessment Interview, logbook
Principles of advanced procedures in cardiac surgery and clinical management of affected patients (valve surgery and thoracic aortic surgery, including ascending, transverse, and descending aortic surgery with circulatory arrest).	daily examination under supervision	Assessment interview, clinical case presentation during weekly clinical conference
Principles and state of the art of mechanical support including intra-aortic balloon pumps, and extracorporeal membrane oxygenation.	self-study, during ICU rotation	Assessment interview, clinical case presentation during weekly clinical conference
Current state of temporary and long-term mechanical circulatory support (ventricular assist devices, total artificial hearts).	daily examination under supervision, theoretical interactive discussion, self-study	Assessment interview, Logbook
Principles of use of inhaled pulmonary vasodilators (nitric oxide (NO), prostaglandins).	daily examination under supervision, self-study, clinical teaching rounds	Knowledge Assessment interview, Journal Club presentation
Principles of fast-track surgery.	daily examination under supervision, self-study	Assessment Interview, Logbook
<b>2.II. Anesthesia management – thoracic surgery (Level A)</b>		
Principles of common procedures in thoracic surgery (open and thoracoscopic lung resections, robot lung resection, lung volume reduction surgery, mediastinoscopy, pneumonectomy).	seminar thoracic anesthesia quarterly , self-study	Knowledge Assessment Interview
Principles of diagnostic and interventional bronchoscopic surgery (lung volume reduction, bronchopulmonary lavage; endoscopic, rigid fiber optic and laser resection; bronchial stenting and sealing).	daily examination under supervision, self-study, thoracic anesthesia seminar	Knowledge Assessment Interview , direct observation procedural skill
Principles of peri-operative management of esophageal surgery for varices, neoplastic, colon interposition, foreign body, stricture, and tracheoesophageal fistula.	theoretical interactive discussion with instructor	Knowledge Assessment Interview
<b>2. III. Anesthesia management – major vascular surgery (Level A)</b>		
Knowledge of perioperative management of TEVAR and EVAR.	during vascular rotation theoretical and practical teaching	Knowledge Assessment Interview , direct observation procedural skill
Knowledge of the principles of perioperative management of lumbar drainage for aortic interventional procedures.	self-study, theoretical teaching	Assessment Interview
Excellent knowledge of the principles of spinal cord protection during surgical and interventional aortic procedures.	theoretical seminar vascular surgeon	Assessment Interview
Excellent knowledge of the principles of cerebral function monitoring.	theoretical seminar vascular surgeon	Assessment Interview
<b>2. IV. Post-operative management/ Critical care (Level A)</b>		

Knowledge of cardiac and thoracic physiology.	self-study	Assessment Interview
Postoperative cardiac critical care, including analgesia, sedation and ventilation.	during ICU rotation	Interactive round
Postoperative care and analgesia after thoracic surgery.	during ICU rotation	Interactive critical care round
An understanding of the management of cardiac pacing modes.	during ICU rotation , self-study	Assessment Interview
An understanding of extracorporeal membrane oxygenation and other devices used for mechanical circulatory support.	during ICU rotation as mentioned before	Assessment Interview
<b>2. VII. Advanced perioperative echocardiography (Level A)</b>		
Advanced level of knowledge in peri-operative cardiac echocardiography according to the EACVI/ EACTA process of certification guidelines.	according to EACTA/EACVI guidelines, Self-study,	EACTA-EACVI Logbook
<b>2. VIII. Heart and/or lung transplantation (Level A)</b>		
Understanding of the physiology and clinical presentations of end-stage heart and lung disease and surgical options for their management.	theoretical teaching rounds monthly , self-study	Assessment Interview
Understanding of the principles of heart transplantation and clinical management of affected patients.	examination under direct supervision by instructor	Assessment Interview
Knowledge of current limitations of organ transplantation and efforts to increase the suitable donor pool.	self-study	PUBmed-Research, Assessment Interview
Understanding of the multidisciplinary nature of patient evaluation and listing for transplantation.	2-day hospitation in the transplantation office HDZ	Logbook
Knowledge of the principles of donor optimization, management and allograft retrieval.	2-day hospitation in the transplantation office HDZ	Logbook
Knowledge of the principles of ex-vivo heart and lung perfusion.	self-study	Assessment Interview
Understanding of the physiology of the denervated organ.	self-study	Assessment Interview
Understanding of the surgical conduct of heart transplantation and knowledge of intra-operative and immediate postoperative care, including stability of induction, ventilation, oxygenation, hemodynamic support, and allograft and noncardiac organ protection.	theoretical interactive discussion with surgeon, monthly conference	Assessment Interview
Understanding of primary graft dysfunction and indications for mechanical circulatory support.	theoretical inetractive discussion with instructor	Assessment Interview
Understanding of the surgical options for lung transplantation, including minimally invasive lung transplantation and various intraoperative extracorporeal support mechanisms.	monthly session together with cardiac surgeons, interactive discussion	Assessment Interview
Knowledge of intra-operative and immediate postoperative care, including protective ventilation, oxygen delivery, hemodynamic support, indications for inhaled NO and other pulmonary vasodilators, allograft and non-pulmonary organ protection.	examination under supervision, self-study	Knowledge Assessment Interview
Knowledge of the principles of primary lung dysfunction and conservative and extracorporeal treatment options, including indications for and techniques of ECMO.	thoracic anesthesia session , weekly clinical conference	Assessment Interview, Logbook
Understanding of immunosuppressive regimens and the role of postoperative infections and sepsis.	2-day visit on transplant ward HDZ	logbook
<b>2. IX. Research module (Level A)</b>		
Principles of clinical trials, including design, end points, inclusion / exclusion criteria, reporting requirements.	Interactive research seminar monthly	Logbook
Understanding of Good Clinical Practice (GCP) requirements for clinical research involving patients.	GCP guidelines course basic and advanced	Logbook
Understanding of European and specific national ethics frameworks, including research ethics applications, clinical regulatory frameworks and hospital site-specific assessment.	self-study , GCP guideline course basic and advanced	Logbook
Principles of sample size and study power determinations and basic statistical evaluation	Statistic clinician HDZ, 1-day hospitation	Logbook
Principles of patient and data confidentiality agreements.	Clinical study nurse office: 1-day hospitation	Logbook
Understanding tools for data collection, analysis and reporting.	Clinical study nurse office: 1-day hospitation	Logbook
Principal international basic science priorities in the field of cardiac anesthesia.	self-study	Logbook
Ethics and practicalities of biological sample collection, storage and biobanking	Biobanking HDZ: 1-day hospitation	Logbook
Principles and ethics of scientific publishing.	theoretical interactive discussion with program director	Logbook

**12. Assessment**

The Programme Director will evaluate each fellow every 3 months

Yes / No

Assessment tools

360-degree evaluations

Yes

Clinical skills evaluations

Yes

Personal reports from the faculty

Yes

Self-assessment by Fellow

Yes

Learning goals for the next three months

Yes

Feedback from Fellows

Yes

A logbook will be available

Yes

Reports of Evaluation will be available

Yes

The Programme Director will give an appraisal for each fellow every 3 months

Yes

The faculty and trainee should agree a joint evaluation both fellow's progress and the training programme, and devise a plan for addressing any perceived difficulties or deficiencies.

Yes

Training programmes should encourage fellows to provide a written confidential evaluation of the programme.

Yes

External evaluation / assessment will be held as per EACTA regulations

Yes

The centre will be able to maintain a register of those fellows who have entered and successfully completed a training programme in order to continue its accreditation as a training centre

Yes

There will be regular opportunities for Fellows to provide confidential written evaluations of the faculty and program to the EACTA Education Chair

Yes

Periodic evaluation of patient care (quality assurance) is mandatory. Subspecialty trainees in cardiac, thoracic, and vascular anesthesia will be involved in continuing quality improvement and risk management.

Yes

Yes



Trainees in cardiac, thoracic and vascular anaesthesia will actively participate in the periodic evaluation and reassessment of the Fellowship training goals and objectives

Yes
Yes
Yes

Should unforeseen circumstances arise such as personal conflict between a Fellows and tutors, this should be reported immediately to the Chair of the Education Committee.

At the end of the training period, the centre would acknowledge in writing successful completion of a fellow training.

### 13. Practice-based Learning and Improvement

1. Briefly describe one planned learning activity in which fellows engage to: identify strengths, deficiencies, and limits in their knowledge and expertise (self-reflection and self-assessment); set learning and improvement goals; and identify and perform appropriate learning activities to achieve self-identified goals (life-long learning).

The structure of the Fellowship is comprehensive and will expose the fellow to every clinical aspect of the field of Cardiothoracic Anaesthesia. Through direct supervision, the assessment through the supervisor as well as regular assessment interviews; the fellow will be able to objectively define his strengths, deficiencies and limits. After that, a constructive and objective feedback will guide the fellow into his needed learning activities and the supervisor will accordingly concentrate on the 'weak points' of the fellow.

2. Briefly describe one planned quality improvement activity or project that will allow the fellows to demonstrate an ability to analyse, improve and change practice or patient care. Describe planning, implementation, evaluation and provisions of faculty support and supervision that will guide this process.

The fellowship will include several activities to measure the quality of clinical outcome and to reflect this measurement on patient care. Reviews of morbidity or mortality data are held regularly at our center. Case reviews are always encouraged for interesting or challenging cases. Our internal SOPs (Standards of Practice) are always under continuous reviewing and updating. Also, we would regularly review the effectiveness of our teaching program.

3. Briefly describe how fellows

Through regular assessment the fellow will obtain an objective feedback of his/her clinical outcome. The feedback will be followed by a change of the learning environment that fits the needs of the fellow. The feedback will be considered effective only if it was reflected in the appropriate evidence-based practice that would improve patient care.

4. Briefly describe one example of a learning activity in which fellows engage to develop the skills needed to use information technology to locate, appraise, and assimilate evidence from scientific studies and apply it to their patients' health problems. The description should include:

Fellows are encouraged to look for the best evidence available to be implemented into patient care. Our center has subscriptions and connections to most medical databases free of charge and they are always available for fellows.

5. Briefly describe how fellows will participate in the education of patients, families, students, fellows, and other health professionals.

Our centre has a dynamic teaching environment on all levels from the medical student up to the university Professor. Fellows are required to educate and reassure family members of patients. Also, as in every university hospital, medical students are usually attached to fellows in order to get a simple overview of cardiothoracic anaesthesia.

### 14. Interpersonal and Communication Skills

1. Briefly describe one learning activity in which fellows demonstrate competence in communicating effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, and with physicians, other health professionals, and health-related agencies.

The fellow is required at some point to run the pre-anesthetic clinic with a supervisor. He/she will inform the patient and the accompanying family about the flow of the procedure and the possible risk in a professional and compassionate way. The fellow would use a simple approach that fits the patient's social level and cultural background. The fellow will also regularly communicate with other disciplines (Cardiothoracic surgery, Cardiology, Pulmonary diseases and ICU) and run active constructive discussions for the benefit of the patient. After anesthetic care of patients, the hand-over to cardiothoracic ICU is very structured and follows a well-established concept (SBAR).

2. Briefly describe one learning activity in which fellows demonstrate their skills and habits to work effectively as members or leaders of a health care team or other professional group. In the example, identify the members of the team, responsibilities of the team members, and how team members communicate to accomplish responsibilities.

The flow of work in the anaesthesia department is well divided between members according to their level and expertise. The fellow is required to work in harmony with other team members in order to get the best possible outcome. A very important activity to implement team work is proper hand-over and team-debriefing process. Daily morning rounds and case presentation of the operating program define the role of each team member including the fellow.

3. Briefly describe how fellows will be provided with opportunities to act in a consultative role to other physicians and health professionals related to clinical information systems.

Fellows are required to provide care to patients on a consultative basis such as postoperative analgesia, difficult airway management and intubation, sedation in the radiology department or difficult peripheral venous access. Also, fellows will be involved in teaching physicians from other disciplines such as cardiac surgery residents, cardiology residents and medical students basic anesthetic skills such as intubation and venous puncture. The fellow will be also included in student lectures as well.

4. Briefly describe how fellows will be provided with opportunities to maintain comprehensive, timely, and legible medical records, if applicable

Our centre is well-equipped with modern electronic patient data systems including PDMS- anaesthesia protocols that are efficient and precise. The fellow will obtain a comprehensive introduction to the electronic patient records system and how to deal with patient information.

5. Briefly describe how fellows will maintain a comprehensive anaesthesia record for each patient, including evidence of pre- and post-operative anaesthesia assessment, an ongoing reflection of the drugs administered, the monitoring employed, the techniques used, the physiologic variations observed, the therapy provided as required, and the fluids administered.

Our centre uses a very modern electronic patient data management system (Copro) at all anaesthetic stations and on the cardiothoracic and cardiological ICU. The fellow will be trained to use this system and to document all relevant anesthetic data.

6. Briefly describe how fellows will create and sustain a therapeutic relationship with patients, engage in active listening, provide information using appropriate language, ask clear questions, provide an opportunity for comments and questions, and demonstrate sensitivity and responsiveness to cultural differences, including awareness of their own and their patients' cultural perspectives.

The fellow will first engage in pre-anaesthetic visits under supervision in order to have an overview of potential difficulties in communication with different cultures. The fellow is required to demonstrate sensitivity and responsiveness to patients' cultural differences as well as worries regarding treatment. All possible risks must be announced in a professional manner and the therapeutic plan must be shared with the patient

**15. Professionalism**

Briefly describe the learning activity(ies), other than lecture, by which fellows demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles, including: compassion, integrity, and respect for others; responsiveness to patient needs that supersedes self-interest; respect for patient privacy and autonomy; accountability to patients, society, and the profession; and sensitivity and responsiveness to a diverse patient population, including to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

Fellows are required to adhere to the main principles of professional clinical practice, which are: providing the best available clinical care, maintaining good medical practice by keeping knowledge and skills up to date, willing to get involved in teaching and training as well as assessing others, building good relationships with patients from different backgrounds and respecting their confidentiality, maintaining good working relationships with colleagues and being honest and trustworthy and act with integrity.

**15. Systems-based Practice**

1. Describe the learning activity(ies) through which fellows achieve competence in the elements of systems-based practice: working effectively in various health care delivery settings and systems, coordinating patient care within the health care system; incorporating considerations of cost-containment and risk-benefit analysis in patient care; advocating for quality patient care and optimal patient care systems; and working in inter-professional teams to enhance patient safety and care quality

The fellow is required to work as part of a team, displaying good communication and interpersonal skills, he/she must be able to work in interprofessional teams to enhance patient safety and improve patient care quality. The fellow must interact not only with the patient but also with the patient's family, caretakers, consultants, and fellow members of the medical care team. Fellows will also need to exercise flexibility as situations change. The fellow must understand and weigh the risks and benefits of each procedure, treatment plan, and goal in patient care. The fellow must also be aware of certain costs and be able to alleviate them when needed (by using alternative treatment solutions).

2. Describe an activity that fulfils the requirement for experiential learning in identifying system errors and implementing potential systems solutions.

During M&M conferences, fellows will have the chance to discuss complicated cases and to have an open error environment with staff members in order to identify suboptimal treatments or errors and to provide solutions that would alter practice and improve patient care quality and safety.

**16. EACTA Site Visit (for 1-day)**

Dates proposed for the visit (at least 3)

00/00/2020

or

00/00/2020

or

00/00/2020

I hereby accept the regulations of the Hospital Visiting especially to take in charge the travel costs and the hotel accommodation of the 2 reviewers on the most reasonable base

Yes

Other comments

To be completed by the Head of department or the authorised deputy.  
Please fill in all required fields and send to [eacta@aimgroup.eu](mailto:eacta@aimgroup.eu)

**Ostwestfalen-Lippe (OWL) – Fellowship Programme in Cardiothoracic and Vascular Anaesthesia and Intensive Care  
Ruhr-University Bochum, Germany**

**Introduction**

Ostwestfalen-Lippe (abbreviation OWL), is a technology region in the German state of North Rhine-Westphalia, with a 2,000-year-old history and culture. Ostwestfalen-Lippe is the eastern part of the region of Westphalia, joined with the Lippe region.

**Duration of the Fellowship**

The cardiothoracic and vascular anaesthesia fellowship of OWL is offered for duration of two years.

**Aim of the Fellowship Program**

The aim of the fellowship program is to provide anaesthesiologists with certain core intellectual, clinical as well as nonclinical skills for the safe and effective conduction of cardiothoracic and vascular anaesthesia. The fellowship will produce anaesthesiologists with solid clinical and academic experience who are experts in the perioperative management of patients undergoing complex cardiothoracic and vascular procedures including the postoperative intensive care management. After completion of the programme, the fellow will be able to work independently as a consultant in cardiac, thoracic and vascular anaesthesia.

This fellowship program includes all aspects of the upcoming EACTA curriculum.

**Requirements for Selection as a Fellow**

Candidates for the fellowship program should have finished their residency training. The fellow must be board certified or board eligible according to European residency standards and must be proficient in German language (B2 Level is required) in order to apply for German Work-Permission as a physician. In addition, approbation is mandatory.

## **Organization**

The OWL Fellowship Programme is based in the Heart and Diabetes Center NRW, Bad Oeynhausen, Ruhr University Bochum, Germany. The fellowship is organized and directed by Univ.-Prof. Dr. med. Vera von Dossow, director of the Institute of Anaesthesiology, in collaboration with Univ.-Prof. Dr. med. Jan Gummert, director of the Department of Thoracic and Cardiovascular Surgery.

In addition, there is collaboration with Prof. Dr. Dietrich Henzler FRCCP (director of the Institute of Anaesthesiology at Herford Hospital) and Dr. Mathias Emmerich DEAA (director of the Institute of Anaesthesiology and Intensive Care at Bad Oeynhausen Hospital) for training and curriculum development in the fields of thoracic and vascular anaesthesia.

## **Division Heads are:**

- Adult and Paediatric Cardiothoracic and Vascular Anaesthesia: PD Dr. A. Koster (EACTA member) and Dr. N. George (EACTA member); Institute of Anaesthesiology, Heart and Diabetes Center NRW, Bad Oeynhausen.
- Academic Research: Univ.-Prof. Vera von Dossow; Director of the Institute of Anaesthesiology, Heart and Diabetes Centre NRW, Bad Oeynhausen.
- Head of the ECMO Team and Intensive Care Unit: Dr. med. N. Weinrautner, Department of Thoracic and Cardiovascular Surgery, Heart and Diabetes Centre NRW, Bad Oeynhausen.
- TEE: Dr. N. George (EACTA member), Dr. D. Papp (EACTA member), all EACVI/EACTA certified
- Univ.-Prof. Dr. med. P. Zahn, director of the Institute of Anaesthesiology, Knappschafts Krankenhaus, Ruhr University Bochum.
- Univ.-Prof. Dr. med. D. Henzler, FRCCP, director of the Institute of Anaesthesiology, Herford Hospital, Ruhr University Bochum.
- Dr. M. Emmerich, DEAA, director of the Institute of Anaesthesiology and Intensive Care, Bad Oeynhausen Hospital.

## **Accreditation**

Our center is one of a few European centers accredited to run the EACTA Fellowship Program. Completion of the programme will be acknowledged by the Institute of Anaesthesiology and the Department of Thoracic and Cardiovascular Surgery (for optional training in Intensive Care Medicine) at the Heart and Diabetes Center NRW, Bad Oeynhausen, in junction with the European Association of Cardiothoracic

Anaesthesia (EACTA). The EACTA accreditation is awarded after successful completion of the competencies set by the EACTA curriculum which was formed by the Education Committee (EDUCOM EACTA). Acquirement of these competencies is obligatory for the certification process of the fellow and a logbook of all clinical activities should be accomplished and documented.

### **Obligation of the fellow**

The OWL-Fellowship Programme includes pre-, intra- and postoperative care of patients undergoing cardiac, thoracic and vascular operations. The fellow takes part in the clinical routine, clinical case conferences, morbidity and mortality conferences with the Institute of Anaesthesiology, the Department of Thoracic and Cardiovascular Surgery, the Department of Paediatric Cardiac Surgery, the Department of Cardiology and Paediatric Cardiology as well as the Department of Rhythmology. In addition, transoesophageal echocardiography (TEE) and bronchoscopy simulation as well as interprofessional communication skills, structured hand-over protocols (SBAR-concepts) and a concomitant masterclass curriculum are included in the fellowship training. The masterclass curriculum contains lectures and case of the month conferences which allows the fellow to acquire the knowledge to care for the patients. The fellow should at least perform 120 TEE examinations per year. Furthermore, the fellow is involved in academic research projects including preparation and publication of review articles, clinical research as well as book chapters. These academic activities are offered and strongly encouraged. The fellow is responsible for the documentation of the cases and the TEE examinations in the logbook during his fellowship.

### **Evaluation**

Every 3 months the fellow`s progress will be evaluated and discussed by the programme director and the division heads. The following items will be assessed:

- Professional attitude
- Fund of knowledge
- Practical skills
- Social competence
- Efficiency for patient management
- Critical analysis for any relevant clinical situation
- Involvement in quality assurance and risk management

At the end of the training period, the fellow will receive a testimonial. We will motivate the fellow to attain the EACVI/EACTA TEE certification.

## **Faculty**

The programme director and division heads have a large experience in cardiothoracic and vascular anaesthesia.

Univ.-Prof. Dr. med. Vera von Dossow is the programme director and she is responsible for the fellowship program and has an extensive experience not only in the perioperative care of cardiothoracic and vascular patients but also in the intensive care medicine. She is EACTA member and would have enough time to direct the programme (at least 10 % of working time). The faculty will devote sufficient time to provide substantial Leadership to the programme and supervision for the trainees. This includes the division heads who are also EACTA members (PD Dr. Koster, Dr. Tobias Kammerer). In addition to the primary coaches of the fellow, further senior members of cardiothoracic and vascular anaesthesia team serve as clinical teachers for the fellows in daily practice. The Institute of Anaesthesiology consists of 25 consultants who are specially trained in cardiovascular and thoracic anaesthesia as well as intensive care medicine. Most of them are EACTA members and some of them are TEE-certified from EACTA and DGAI (German Society of Anaesthesiology and Intensive Care Medicine).

## **Resources**

The Heart and Diabetes Centre (HDZ) NRW is a 500-bed facility, a University Hospital of the Ruhr-University Bochum and a leading international centre that specializes in the treatment of cardiac, thoracic, vascular and diabetic diseases. With four departments (Thoracic and Cardiovascular Surgery, Cardiology, Paediatric Heart Centre and Centre for Congenital Heart Defects as well as the Diabetes Centre) and three University Institutes (Anaesthesiology, Laboratory and Transfusion Medicine as well as Radiology, Nuclear Medicine and Molecular Imaging), it counts as a centre of competence, which is both a national and an international leader. The Department of Thoracic and Cardiovascular Surgery is a very busy unit that treats a big mixture of cases, which includes all standard and complicated adult and paediatric cardiac surgeries including heart and lung transplantation. As a University Hospital, the centre makes a significant contribution to research and teaching. Our facility operates a Centre for Clinical Research and Development facilitating the translation of clinical knowledge to innovations.

### **Key Statistics of our Facility:**

- With 37.000 patients per year including 14.700 inpatients the HDZ NRW is one of the leading institutions of its kind in Europe.

- HDZ NRW performs nearly 4000 heart operations, 10000 catheter examinations (including 3000 interventions), 800 electrophysiological examinations and the elimination of 1000 congenital heart defects per year.
- Since the HDZ opened its doors, more than 130.000 open-heart operations and 270.000 catheter examinations have been successfully performed.
- Since 1989, more than 2300 hearts have been transplanted and more than 3700 ventricular assist devices were fitted at the HDZ NRW.
- Specialist for implants: the HDZ NRW is one of the largest centres for the implantation of pacemakers and defibrillators
- The HDZ has a total of 500 normal ward beds, including:
  - **70 intensive care beds for adult cardiothoracic surgery adult patients**
  - 23 intensive care beds for adult cardiology patients.
  - 16 intensive care beds for paediatric cardiology and cardiac surgery patients.
  - 23 beds for patients with Mechanical Circulatory Support (VAD).

#### **Department of Thoracic and Cardiovascular Surgery**

Head of the Department: Prof. Dr. med. J. Gummert, director of the Department of Thoracic and Cardiovascular Surgery, and medical director of HDZ NRW, Bad Oeynhausen since 2009. He is member of all national and international associations of cardiovascular surgery and transplantation. He is author and Coauthor of approximately 400 publications.

#### General brief description and key competences:

The specialists at the Department of Thoracic and Cardiovascular Surgery perform the entire range of cardiac surgery techniques. The department outperforms all other departments in Germany in the areas of cardiac valve surgery, heart transplantation, artificial heart implantation and cardiac pacemakers/ICD intervention as well as thoracic surgery and lung transplantation. It is a national and international reference centre for mitral valve repair, congestive heart failure, heart transplantation, LVAD assist implantation and Off-pump surgery. Minimally invasive approaches and new technologies are widely used. The specialists at the department cover also the interventional cardiology theatre in cooperation with the department of cardiology to perform TAVI procedures.



Up to 100 thoracic surgeries are performed per year at HDZ NRW. This includes the spectrum of VATS, thoracotomies, sleeve resection, lobectomy, pneumectomy, carina resection as well tracheal surgery. 5-10 lung transplantations are performed per year.

Vascular surgery covers all major and complex forms of aortic surgery (aortic dissection, aorta ascendens surgery, hybrid) at HDZ NRW. In addition, near to HDZ NRW at Bad Oeynhausen Hospital vascular surgery is also well-established and includes endovascular/open surgery procedures of the descending thoracic and abdominal aorta (n= 150/Year), abdominal aneurysm (open surgery and EVAR (n= 50), carotis endarterectomy (n= 25/year) as well as bypass surgery on the lower extremity (n= 60/year).

**Facilities HDZ NRW:**

- Nine operation theatres equipped with the latest technologies needed to care patients undergoing Cardiovascular and Thoracic Surgery. Two of them are Hybrid Operation theatres.
- Laboratory of Perioperative Echocardiography (Head: Dr. med. C. Palusciewicz), that is equipped with modern three-dimensional echocardiography and is 24-hours per day on-duty.
- Support of three postoperative intensive care units (total ICU beds: 62), that are equipped with the latest medical equipment and have teams with a long-standing expertise in the management of patients after heart surgery
- Outpatient`s clinic for pre and postoperative evaluation, for heart failure, for surgery of arrhythmias and for valvular surgery.

**Summary of Surgeries and Interventions 1-12/2019**

Aortic valve surgery (open/minimal-invasive)	1481
Mitral Valve surgery (open/minimal-invasive)	724
Tricuspid valve surgery (open/minimal-invasive)	175
Revascularisation bypass (On-pump/off-Pump)	1453
LVAD-Implantation/Total artificial heart	98
Extracorporeal support (IABP, ECMO, Impella)	> 200
Heart Transplantation	89
TAVI (transfemoral/transapikal)	550
Mitral/Tricuspidalclip	100
Lung transplantation	10

Aortic surgery (aortic dissection, aorta ascendens surgery, hybrid etc.)	321
CTEPH	< 5
Thoracic surgery (lobectomy, sleeve resection, pneumectomy, VATS, thoracotomy, tracheal surgery)	100
Vascular surgery (thoracoabdominal, open surgery, endovascular repair, EVAR, aneurysm abdominal, carotis endarterectomy)	>250

## **Cardiovascular and Thoracic Anaesthesia**

Fellows are trained to provide perioperative anaesthetic management for patients with severe cardiopulmonary pathology. The subspecialist in adult cardiothoracic and vascular anaesthesia will be proficient in providing anaesthesia care for patients with cardiac, vascular or thoracic diseases undergoing cardiac surgery with and without extracorporeal circulation, surgery on the thoracic and abdominal aorta, pulmonary, chest wall, mediastinal and tracheobronchial surgery, non-operative diagnostic and interventional cardiac, thoracic and vascular procedures as well as electrophysiological procedures.

### **1. Clinical Components and Structure of the Basic Fellowship:**

- 7-month cardiac surgery:
  - 150 cardiac surgery cases with and without cardiopulmonary bypass done by the trainee himself.
- 1,5-month thoracic surgery:
  - 25 thoracic surgery cases per trainee per year, the trainee must gain experience in lung isolation techniques, one-lung ventilation, difficult airway management and bronchoscopy in thoracic surgery.
- 1-month vascular surgery:
  - 25 vascular surgery cases per trainee/per year, trainee must gain experience in vascular anaesthesia, TEE diagnostic, coagulation management
  - Elective and emergency aortic repair, aortic dissection, abdominal and aortic aneurysm (open and endovascular repair), EVAR, carotid endarterectomy
- 1-month ICU
- 0.5 month in Perfusion:
  - Techniques of cardiopulmonary bypass, cardioplegia solutions tec.
  - Experience with Patient Blood Management and interpretation of Point-of-Care coagulation monitoring (e.g. ROTEM, TEG)
- 0,5-month Interventional cardiology:
  - Experience in the anaesthetic management of patients undergoing interventional procedures (Transcatheter Aortic Valve Implantation (TAVI) Mitral Valve Clip, Tricuspid valve Clip, cardiac catheterization and cardiac electrophysiologic diagnostic/therapeutic procedures

- Experience in the anaesthetic management of patients planned for pacemaker and automatic implantable cardiac defibrillator implantation as well as surgical treatment of arrhythmias.
- 0,5-month TTE/TEE:
  - Education in basic perioperative echocardiography according to the EACVI (European Association of Cardiovascular Imaging) and EACTA (European Association of cardiothoracic anaesthesiology) guidelines of TEE certification. Certification process includes a theoretical part by passing a written examination and a practical part by submitting a logbook of 125 clinical cases (or 75 if he/she holds a valid TTE certification).
- Didactic curriculum provided through lectures, conferences, workshops will supplement the clinical experience for the two years of the fellowship program
- Experience in the preoperative patient evaluation and interpretation of cardiovascular and pulmonary diagnostic test data.
- Experience in the usage and interpretation of current neuromonitoring techniques (pEEG, NIRS, SSEP, MEP)

## **2. Clinical components and Structure of the Advanced Fellowship (12 month)**

The Fellow will focus on complex cases such as re-do surgery, LVAD –Implantation, Total Artificial Heart, Heart and Lung transplantation, on the activity of the cardiac surgery ICU (70 beds for CTV). The competencies acquired in this field include:

- Optional 3-6-month rotation in adult and paediatric cardiac anaesthesia:
  - (Re-do Surgery: complex combined cases: at least 20 cases
  - LVAD- Implantation: at least 10 cases
  - Heart and lung transplantation: at least 10 heart transplantations, 2 lung transplantations
  - paediatric cardiac anaesthesia (15 paediatric cardiac cases, e.g. switch operation, Fontan procedures, ASD, VSD)
- optional 3-month surgical ICU/PACU
  - Management of postoperative hemodynamics, fluids and metabolism including the manipulation of vasoactive agents.
  - Management of pacemakers and chest tubes.
  - Invasive and non-invasive ventilator support, the use of nitric oxide, care of patients with percutaneous tracheostomies.

- Fast-Track-Concept, sedation and weaning protocols.
- Intermittent/continuous renal replacement therapy.
- Management of patients with Mechanical Circulatory Support such as VV- and AV-ECMO, IABP, Impella, VAD and total artificial heart
- Clinical neurological and delirium assessment, and interpretation of neuro-, chest and vascular imaging.
- Fellows will follow all the activities of the ICUs under the supervision of senior ICU specialists (Head of the ICU Division: Dr. med. N. Weinrautner)
- Optional:
  - 3-month thoracic anaesthesia
  - 3-month vascular anaesthesia
  - 3-month TEE/TTE
  - 3-month research module (preparation of book chapter or review, research publication, preparation of case conference etc.)

### **Application Process**

The applicant should email a cover letter to the program director stating her/his interest in the position, together with the following documents:

- 1) Current curriculum Vitae (CV)
- 2) The applicant should be Board certified in anesthesiology. English language and B2 level German language is required. The candidate must be board certified or board eligible according to European residency standards. An employment contract will be signed with the candidate. Accommodation options are provided but have to be paid by the fellow. Transportation options are not provided. There is no monthly salary except for fellows with German approbation.
- 3) Depending on the individual situation of the applicant, other documents maybe needed.

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Fellowship Programme Director

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