Department of Medicine 2.

Director: Professor Thomas Münzel, MD

UNIVERSITÄTSmedizin. MAINZ

Our expertise for your health

Annual Report 2012/13

Annual Report 2012/2013

Department of Medicine 2.

INHALT

Content

INHALT

Foreword

Dear Ladies and Gentlemen,

The following pages will give you an overview on our work in both patient care and research. The years 2012 and 2013 were even more successful than the previous ones for our Department. In the FOCUS survey "Best hospitals in Germany," we were able to improve by one place, raising to the 11th place in Germany.

First the news concerning our clinic: a new Unit for interventional valve therapy was established, and the first professorship in interventional valve therapy in Germany was created. **Professor Ulrich Hink** prevailed against high-profile national competitors; as we expected, this new structure brought a further increase in the number of heart valve implantations by more than 50%.

Professor Katrin Schäfer received a W2-professorship for Translational Vascular Biology, an important progress for our research. She is an outstanding scientist and we foresee major developments in the fields of vascular biology and thrombosis.

A special honor for **Professor Philipp Wild** was the offer to become head of the department of epidemiology at the University Hospital Eppendorf in Hamburg. Fortunately for Mainz, we could beat this offer with a better one, so he became head of the new Unit of Preventive Cardiology and Medical Prevention and was offered a W3-professorship in our clinic.

The department of **Electrophysiology**, led by **Professor Rostock**, continued to grow, and it is increasingly difficult to satisfy the immense demand for interventional therapy of cardiac arrhythmias due to the limited capacity in our catheter lab.

In October 2013, we launched a new awareness campaign for our **Chest Pain Unit**, in cooperation with Mainz 05, Boehringer Ingelheim, the CardioPraxis Mainz and other supporters. With the campaign, we aim to inform the public on this facility dedicated to the early diagnosis of myocardial infarction.

We were able to expand our network for treating coronary patients, the **Herznetz Mainz**, by gaining the Diakonie Hospital in Ingelheim; the cooperation agreement was signed in November.

Our **research activities** continue to focus on major projects such as Gutenberg Health Study (GHS), the Center for Thrombosis and Haemostasis (CTH) and the German Center for Cardiovascular Research (DZHK). The newly established Institute for Cardiovascular Research under the direction of Professor Wild will focus on the duties of the DZHK.

We are glad to announce that Boehringer Ingelheim will continue to support our Gutenberg Health Study, GHS, by 3 Million Euro until 2017.

Our clinic has been able to demonstrate for the first time, by which mechanism **nighttime aircraft** may possibly lead to vascular damage. The results were published in the best European cardiovascular journal and have attracted attention both nationally and internationally.

Our two Foundations, the "Margarete Waitz-Stiftung" and the Foundation "Heart of Mainz", have financed research projects in Mainz and internationally, and have supported us in providing training for nurses and improving our facilities.

We are grateful for the support provided by the Mainz population, by colleagues and by the referring hospitals.

Yours faithfully,

Prof. Dr. med. Thomas Münzel
Professor of Medicine
Direktor of the Department of Medicine 2

FOCUS-Bericht

Our Cardiology Department ranks among the Top 15 in Germany

An updated FOCUS Clinic Ranking is published every year.

The main selection criteria for a top ranking were the recommendations by the referring physicians, objective outcome data selected by FOCUS and a comparison of key indicators from the medical quality reports of the hospitals.

The top hospitals and clinics of the Germany-wide FOCUS ranking receive the award "Top National Hospital in 2013" for Germany.

"To be on 11th place is a great success, since there is a fierce competition among the cardiovascular clinics. And we left many renowned cardiology departments behind us." was the comment by Professor Dr. Thomas Münzel.

FOCUS

FOCUS is a German weekly news magazine. For their yearly ranking of the top hospitals in Germany, they use three ways of research:

1) survey among doctors
2) detailed analysis of quality records
3) questionnaires for the clinics.

More than 18,000 medical specialists and hospital doctors were interviewed. The emphasis in the ranking was on the reputation of the clinic, 25% was based on medical quality, 20% on the quality of nursing, 10% on hygiene and 5% on management and organization.

We are very pleased that our patient managementwas particularly appreciated – this is a sector in which we have invested for years to optimize the patients' journey in our Department.

In the category of cardiology specialists, Professor Dr. Münzel also achieved a very good ranking.

DIE TOP-100-KLINIKEN | ERGEBNISSE

Top 100 Deutschland

	Krankenhaus	Ort/Tel.-Nr.	FOCUS-Klinikscore	Patientenzufriedenheit¹	Fachbereich/Indikation: Alzheimer	Angst	Brustkrebs	Darmkrebs	Depression	Herzchirurgie	Kardiologie	Lungenkrebs	multiple Sklerose	Orthopädie	Parkinson	Prostatakrebs	Risikogeburten	Strahlentherapie	Zwang
					Platz im bundesweiten Indikationen-Ranking: ■ 1. Platz ■ 2./3. Platz ■ 4. bis 10. Platz														
1	Charité Universitätsmedizin Berlin	Berlin 030/45050	1349	74	24	4	8	3	16	43	21		9	2	9	4	1	5	
2	Klinikum d. Ludwig-Maximilians-Univ. München	München 089/70950	1067	78	37	36	38	5	21		8	9	11	58		16	4	14	12
3	Universitätsklinikum Freiburg	Freiburg 0761/2700	1038	78	15	9	7	44	1	15	1*	4	31	59	35	70	25	4	4
4	Universitätsklinikum Carl Gustav Carus	Dresden 0351/4580	939	77	11	16	57	6	6				8	23	2	2	28	12	16
5	Universitätsklinikum Heidelberg	Heidelberg 06221/560	934	79		23	6	1	5	8	7	1	5	8		8	34	1	7
6	Klinikum rechts der Isar der TU München	München 089/41400	768	79	13		25	20	30		58		6	48	19	1	8	25	
7	Klinikum d. Johann Wolfgang Goethe-Universität	Frankfurt a. Main 069/63010	765	74	20	12	16	24	54	31	10		21		12	20	21	9	
8	**Univ.-Med. d. J. Gutenberg-Universität Mainz**	**Mainz 06131/170**	751	78	16	10	13	4	17	35	11		7			11		15	
9	Universitätsklinikum Würzburg	Würzburg 0931/2010	739	76	33	7	76	12	29	22	16		34		29	23	43	2	
10	Universi… Hamburg																		
11	Universi… Erlangen																		
12	UK* Sch… Campus																		
13	Universi…																		
14	Universi… Tübinge…																		
15	Universi… Aachen																		
16	Universi… Göttinge…																		
17	Uniklinik…																		
18	UK* Gie… burg, St…																		
19	Universi… Münster																		
20	Universi… Saarland…																		
21	Universi… Düsseld…																		
22	Universi… Leipzig																		
23	Universi…																		
24	Klinikum…																		
25	Medizini… Hannove…																		

*UK = Univ…

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Kardiologie

	Abteilung/Krankenhaus	Ort/Tel.-Nr.	FOCUS-Klinikscore¹	Reputation	medizinische Qualität¹	Hygienestandard	Pflegequalität¹	Patientenzufriedenheit¹	Besonderheiten
	SPITZENGRUPPE DEUTSCHLAND	nach FOCUS-Klinikscore gerankt							
1	**Klinik für Kardiologie und Angiologie** Universitäts-Herzzentrum Freiburg Bad Krozingen	**Bad Krozingen** 07633/4020	85	■■■	82	◆◆	84	85	*katheterbasierte Behandlung, Hybrid-OP, nichtinvasive Bildgebung*
2	**Kardiologie** Kerckhoff-Klinik	**Bad Nauheim** 06032/9962202	78	■■■	90	◆◆	36	78	*Herzteams f. Herzklappen, koronare Herzerkrankung, Herzschrittmacher*
3	**Klinik für Herz- und Kreislauferkrankungen** Dt. Herzzentrum München – Klinik a.d. TU München	**München** 089/12184073	78	■■■	65	◆◆	83	83	*transfemoraler Aortenklappenersatz/ Mitralclipping*
4	**Kardiologie** Asklepios Klinik St. Georg	**Hamburg** 040/181885 2305	76	■■■	60	◆◆	68	74	*Studienzentrum, Hochleistungszentr. mit Maximalversorgung*
5	**Klinik für Kardiologie** Herzzentrum Leipzig – Universitätsklinik	**Leipzig** 0341/8651428	76	■■■	49	◆	85	78	*drei hochmoderne biplane Herzkatheteranlagen*
6	**II. Medizinische Klinik – Kardiol., Angiol., Pneumol.** Klinikum Coburg	**Coburg** 09561/226348	73	■■■	59	◆◆	72	75	*Zentr. innere Medizin, klin. Studien, Kardio-MRTs bei Herzrhythmusstör.*
7	**Innere Medizin III: Kardiol., Angiol. und Pneumologie** Universitätsklinikum Heidelberg	**Heidelberg** 06221/568670	72	■■■	56	◆◆	11	79	*Universitäres Herzzentrum, Zentrum für Herzinsuffizienz*
8	**Medizinische Klinik und Poliklinik I – Großhadern** Klinikum der Ludwig-Maximilians-Universität München	**München** 089/70952371	69	■■■	49	◆	88	78	*Chest Pain Unit zur Versorgung der Patienten mit akutem Herzinfarkt*
9	**Kardiologie** Robert-Bosch-Krankenhaus	**Stuttgart** 0711/8101 3456	69	■■■	55	◆	82	83	*Herzzentrum, Herzbildgebung, Forschungseinheit*
10	**Mediz. Kl. III: Kardiol., Angiol./Hämol., Nephrologie** Kl. d. Joh. Wolfgang Goethe-Univ. Frankfurt am Main	**Frankfurt am Main** 069/6301 5789	69	■■■	73	◆◆	68	74	*Kinderherzzentr., Zelltherap. b. Herzschwäche, Aortenklappenimplant.*
11	**II. Medizinische Klinik und Poliklinik** Univ.-Med. der Johannes Gutenberg-Universität Mainz	**Mainz** 06131/177251	68	■■	65	◆◆	88	78	*Hybrid-OP, Chest Pain Unit, Resynchronisationstherap. b. Herzschwäche*
12	**Klinik für Kardiologie, Pneumologie und Angiologie** Universitätsklinikum Düsseldorf	**Düsseldorf** 0211/8118801	68	■■■	67	◆◆	83	75	*Herzteam f. Herzklappe, Herztransplant., Bypass-OP, Gefäßerkrankung*
13	**Inn. Med. – Kardiol., Ang., Pneum., intern. Intens.-Med.** Universitätsklinikum Jena	**Jena** 03641/9324101	67	■■■	74	◆	56	75	*Herzzentrum, kathetergeführte Herzklappenimplantationen*
14	**Inn. Med. – Kardiol., Angiol. u. intern. Intens.-Med.** Universitätsklinikum des Saarlandes	**Homburg/Saar** 06841/1623372	67	■■■	65	◆	82	78	*Therapiemanagement bei therapieresistenter Hypertonie*
15	**Innere Medizin und Kardiologie** Gemeinschafts-KH Bonn – St. Petrus	**Bonn** 0228/5062291	66	■■■	56	◆	81	80	*Herz- und Gefäßzentrum, Hybrid-OP*
16	**Medizinische Klinik und Poliklinik I** Universitätsklinikum Würzburg	**Würzburg** 0931/20157057	66	■■	65	◆◆	91	76	*Deutsches Zentrum für Herzinsuffizienz, Herz-Kreislauf-Zentrum*
17	**Klinik und Poliklinik für Innere Medizin B**	**Greifswald**	66	■■■	65	◆◆	80	75	*Mitglied des Deutschen Zentrums*

Staff
Part 1

Management

Director

Univ.-Prof. Dr. med.
Thomas Münzel
Internal medicine, Cardiology

C4-Professorship
Internal medicine
focus on cardiology

Director
Electrophysiology

Univ.-Prof. Dr. med.
Thomas Rostock
Internal medicine, Cardiology

W-2 Professorship
Electrophysiology

Director
Preventive cardiology
and medical prevention

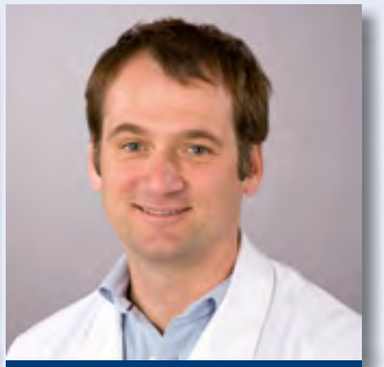
Univ.-Prof. Dr. med.
Philipp Wild, MSc
Internal medicine, Cardiology

W3-Professorship
Preventive cardiology
and medical prevention

Vice Director
Director Department
for interventional valve therapy

Univ.-Prof. Dr. med.
Ulrich Hink
Internal medicine, Cardiology

W2-Professorship
Interventional valve therapy



Director
Internistical intensivcare and
emergency room

Dr. med.
Felix Post,
Internal medicine, Cardiology,
Intensive care

Clinical Manager

Director
Angiology

Univ.-Prof. Dr. med.
Christine Espinola-Klein
Angiology, Internal medicine, Cardiology

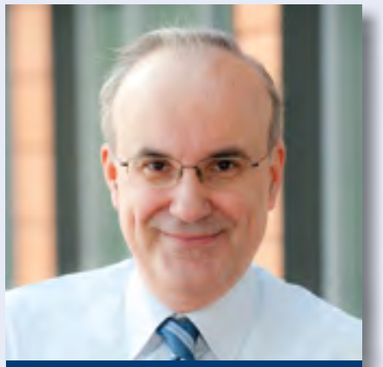
W2-Professorship
Internal medicine
focus on angiology

Professorships in the Department of Medicine 2 and the Center for Thrombosis and Hemostasis (CTH)

Director
Center for Clinical Studies

Univ.-Prof. Dr.
Tommaso Gori
Internal medicine, Cardiology

W2-Professorship
Translational vascular medicine



Director
Center for Clinical Studies of CTH

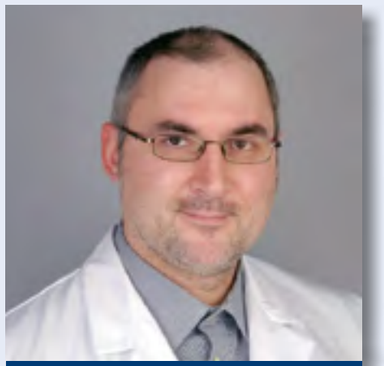
Univ. Prof. Dr. med.
Stavros Konstantinides
Internal medicine, Cardiology

W2-Professorship
Clinical studies
joined appointment
CTH and Department of Medicine 2

Director
Study group –
Translational vascular biology

Univ.-Prof. Dr. med.
Katrin Schäfer

W2-Professorship
Translational vascular biology



Director
Study group
Molecular cardiology

Univ.-Prof. Dr. rer. nat. et. med. habil.
Andreas Daiber
Diplom-Chemiker

W2-Professorship
Molecular cardiology

Senior consultants

Director Echocardio-graphie laboratory

Dr. med.
Stephan von Bardeleben,
Internal medicine, Cardiology

Arne Klett
Internal medicine

Dr. med.
Hanke Mollnau
Internal medicine,
Cardiology,
Electrophysiology

Dr. med.
Eberhard Schulz
Internal medicine,
Cardiology

Prof. Dr. med.
Ewald Himmrich
Internal medicine,
Cardiology,
Electrophysiology

Dr. med.
Joachim Kaes
Internal medicine,
Intensive care,
Emergency Care

Dr. med.
Mir Abolfazl Ostad
Internal medicine

Dr. med.
Sebastian Sonnenschein
Internal medicine, Cardiology,
Intensive care
Electrophysiology

Dr. med.
Alexander Jabs
Internal medicine,
Cardiology

Dr. med.
Cathrin Theis
Internal medicine,
Cardiology,
Electrophysiology

Dr. med.
Gerhard Weißer
Internal medicine,
Angiology

PD Dr. med.
Philip Wenzel
Internal medicine,
Cardiology

Consultants

Dr. med.
Amelie Biedenkopf
Internal medicine,
Cardiology

Dr. med.
Markus Vosseler
Internal medicine

Dr. med.
Ludmila Himmrich
Internal medicine

Dr. med.
Ingo Sagoschen
Internal medicine, Intensive Care, Emergency medicine

Physicians

Dr. med.
Tobias Abt

Dr. med.
Majid Ahoopai

Dr. med.
Natalia Arnold

Dr. med.
Zsófia Bárdonicsek

Dr. med.
Andreas Bender

Dr. med.
Recha Blessing

Dr. med.
Karsten Bock

Dr. med.
Jan Moritz Brandt

Dr. med.
Meike Coldewey

Dr. med.
Ewa Czyz

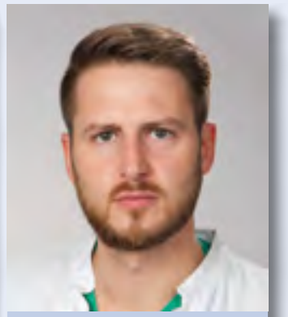
Dr. med.
Simon Diestelmeier

Dr. med.
Jörn Dopheide

Physicians

Dr. med.
Frauke Dumstorff

Dr. med.
Verena Gall



Dr. med.
Simon Gerhardt

Dr. med.
Martin Geyer

Dr.
Ruhollah Ghazi

Dr. med.
Sebastian Göbel

Dr. med.
Heike Hellbauer

Dr. med.
Doris Hempel

Stephanie
Herkenhoff

Dr. med.
Kerstin Hoffmann

Dr. med.
Andrea Hoppen

Dr. med.
Corinna Huth

Physicians

Dr. med.
Thomas Jansen

Dr. med.
Susanne Karbach

Dr. med.
Karsten Keller

Dr. med.
Maike Knorr

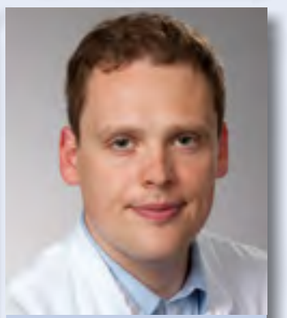
Dr. med.
Torsten Konrad

Damian
Krompiec

Dudu Kutlu

Dr. med.
Denise Kämpfner

Anne Lambrecht



Rafael Laskowski

Sabine Liersch

Charis Mamilou

Physicians

Dr.
Tural Mammadov

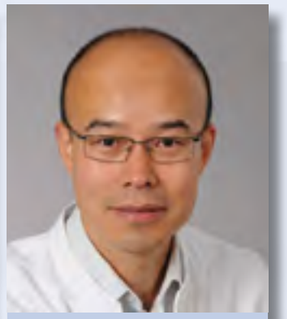
Dr. med.
Philipp Nikolai

Marek Nowak

Dr. med.
Andrea Perne

Dr. med.
Karin Pfirrmann

Dr. med.
Jürgen Prochaska



Dr.
Zhaohua Qu

Dr. med.
Blance Quesada Ocete

Dr. med.
Sonja Riege

Bettina Kristin Ruff

Dr. med.
Kai-Helge Schmidt

Dr. med.
Frank Schmidt

Physicians

Dr. med.
Volker Schmitt

Dr. med.
Boris Schnorbus

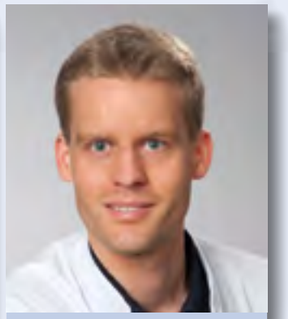
Carolin Schöter

Peter Seidel

Selvije Seta

Dr. med.
Efthymios Sotirou

Dr. med.
Kathrin Stelzer



Dr. med.
Sebastian Steven

Nurse coordination

Gabriele Maas
Clinical Manager and
Director Case Management

Vera Jaresova
Nurse Vice director
Units 4A, 4B and 4C

Bianca Steinheimer
Nurse Vice director
Units 4A, 4B und 4C, CPU

Heike Eich
Nurse Director
Intensive Care Unit

Annette Möhlenhoff
Nurse Director
Intensive Care Unit

Angela Frese
Nurse Director
catheterization laboratory

Manuela Hauenstein
Nurse Vice director
catheterization laboratory

Patrick de Paoli
Nurse Director
Emergency department

Mandy Neumann
Nurse Vice director
Emergency department

Offices · Front Desks · Contact

Our offices and front desks support our physicians and consultants. We are your contact for further inquiries or appointments.

If you need an appointment in our cardiology ambulance, please call 06131 17-2827 (Ms Pape or Ms Schäfer).

The ambulance is located in the 2nd level of building 605.

For appointments for one of our private ambulances or special consultations, our front desks will help you.

Bettina Reichhardt

Directors office / Front desk

Walk-in clinic
Prof. Dr. med. T. Münzel

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+49 (0) 6131 17-7250
Fax +49 (0) 6131 17-6615
bettina.reichhardt@ unimedizin-mainz.de

Linda Blankenburg

Assistance of the director /
Project coordination /
Expert office

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Fax +49 (0) 6131 17-5660
linda.blankenburg@unimedizin-mainz.de

Teresa Peter

Foundation Heart of Mainz
Events CTH
Office Prof. Dr. med. T. Münzel

Phone +49 (0) 6131 17-8215
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Offices · Front Desks · Contact

Front desk
Walk-in clinic
Prof. Dr. med. U. Hink

Front desk
Walk-in clinic heart valve unit

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Fax +49 (0) 6131 17-6692
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Dagmar Benner

Office / Front desk
Walk-in clinic
Prof. Dr. med. T. Rostock

Front desk Electrophysiology and
Walk-in clinic Pacemaker

Phone +49 (0) 6131 17-7218
Fax +49 (0) 6131 17-5534
renate.stauder@unimedizin-mainz.de

Renate Stauder-Eiers

Office / Front desk
Walk-in clinic
Prof. Dr. med. T. Rostock

Front desk Electrophysiology and
Walk-in clinic Pacemaker

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Sonja Köbel

Senior consultant office

Front desk / Walk-in clinic
Univ.-Prof. Dr. med.
C. Espinola-Klein

Front desk
Walk-in clinic Angiology

Phone +49 (0) 6131 17-7293
medine.tunc@unimedizin-mainz.de

Office Management Angiology

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Fax +49 (0) 6131 17-6407
silvia.kranz@unimedizin-mainz.de

Silvia Kranz (links) · **Medine Tunc** (rechts)

Offices · Front Desks · Contact

Office

Front desk / Walk-in clinic
Prof. Dr. T. Gori

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Fax +49 (0) 6131 17-6428
julia.gossee@unimedizin-mainz.de

Julia Gossé

Student Office

Office / Front desk

Walk-in clinic
Prof. Dr. med. Himmrich

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Fax +49 (0) 6131 17-6603
petronella.brugger@unimedizin-mainz.de

Petronella Brugger

Office / Front desk

Walk-in clinic
Dr. med. F. Post

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Fax +49 (0) 6131 17-6613
elisabeth.schons@unimedizin-mainz.de

Elisabeth Schons

Office
Dr. R. S. von Bardeleben

Front desk, walk-in clinic
inborne and acquired cardiac valve
failure, Endocarditis and Ischaemia
diagnostic

Phone +49 (0) 6131 17-2385
Fax +49 (0) 6131 17-8483
christine.walter@unimedizin-mainz.de

Christine Walter

Offices · Front Desks · Contact

ICD-/Pacemaker walk-in clinic

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Fax +49 (0) 6131 17-3418
andrea.kollmus@unimedizin-mainz.de

Andrea Kollmus

Office of unit 4a

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Fax +49 (0) 6131 17-6672
daniela.buls@unimedizin-mainz.de

Daniela Buls

Office of unit 4b

Phone +49 (0) 6131 17-5739
Fax +49 (0) 6131 17-6441
margarita.ratke@unimedizin-mainz.de

Margarita Ratke

Office of unit 4c

Phone +49 (0) 6131 17-2889
carla.christnacht@unimedizin-mainz.de

Carla Christnacht

Offices · Front Desks · Contact

If you need inpatient treatment at the Department of medicine 2, our Case Management staff will help you.

Martina Reihs, Bianca Köpke and Robert König

Phone +49 (0) 6131 17-2633
Fax +49 (0) 6131 17-5532

Robert König and Bianca Köpke of the Case Management

During your admission and discharge form the Department of Medicine 2 your contact persons are:

Sofia Colicelli and Ulrich Bauer
Karin Kefferpütz (Process controlling)

Phone +49 (0) 6131 17-7061 or
+49 (0) 6131 17-2897
Fax +49 (0) 6131 17-6460

The team of the Discharge Management (from left to right: Karin Kefferpütz, Ulrich Bauer, Sofia Colicelli)

Director of Case Management

Phone +49 (0) 6131 17-5354

Gabriele Maas

Front desk / office
Cardiac catheterization laboratory

Phone +49 (0) 6131 17-2090
Fax +49 (0) 6131 17-6669

Beate Kleber

Offices · Front Desks · Contact

Mr Wolf and Ms Thomas

Our Archive administrates all files of our clinic. Ms Thomas and Mr Wolf deal with possible queries of our clinical partners concerning medical results or discharge letters.

Phone +49 (0) 6131 17-2997

Fax +49 (0) 6131 17-6648

Project management · PR

Ms Andrea Mänz-Grasmück is responsible for our PR, cooperation contracts with other hospitals or external providers.

She is the contact for investment budgets and the administration of third-party funding.

Andrea Mänz-Grasmück

Project management
PR

Phone +49 (0) 6131 17-5737

Fax +49 (0) 6131 17-5660

andrea.grasmueck@unimedizin-mainz.de

Staff Spotlights

Dr. med. Ingo Sagoschen

Dr. med. Cathrin Theis

Gabriele Maas

Ilka Walther

Dr. med. Ingo Sagoschen
on the intensive care unit

Dr. med. Ingo Sagoschen
Senior consultant, intensive care unit

Dr. med. Ingo Sagoschen is a senior consultant in the intensive care unit at the Department of Medicine 2 of the University Medical Center of the Johannes Gutenberg-University Mainz.

From 1998 to 2004, he studied medicine at the Johannes Gutenberg-University Mainz. After that, he became an assistant physician in the department of intensive care unit and clinical toxicology (poison information center of the states of Rhineland-Palatinate and Hessen), a working group led by Pofessor Weilemann. In this group, he developed his clinical and scientific focus: the intensive care treatment of acute respiratory failure (ARDS). He obtained his MD title in the year 2008 with a paper on the topic "High frequency oscillation ventilation as a treatment option for acute respiratory failure in adults." He wrote scientific publications on this topic and was invited as speaker at several national and international symposia. Besides optimizing the "conservative" treatment of ARDS he initiated new therapies such as high frequency oscillation ventilation, interventional Lung Assist (iLA®) and the extracorporal Membrane oxygenation (ECMO).

He also pursued his scientific interest in the field of clinical toxicology and together with Professor Weilemann he supervised several medical students working on toxicological issues.

Besides working for the University Medical Center in Mainz he dedicated four years to work in the area of preclinical emergency medicine, in the civil protection council of the city of Darmstadt, as a medical advisor.

In 2009, he initiated together with Dr. Felix Post, the establishment of a medical emergency team of the Department of Medicine 2. Since 2010, this team is on duty in building 605, working in cooperation with members of the clinic of anesthesiology. Since 2010, he is the first certified instructor for the "European Resuscitation Council" (ERC) in the Department of Medicine 2. Since then, he teaches acute medical care to physicians and nursing staff, both in-house and outside.

In 2012, he underwent board exams to become a specialist in internal medicine, he also obtained the additional title of specialist in Clinical Toxicology (according to GFKT). In 2013 he recieved the additional title of "Special Intensive Care Medicine," and in 2008, the additional title "Emergency medicine".

In the field of intensive care, he wrote comprehensive treatment standards (SOP) and in 2013 he could establish the first University Medical Center-wide standard for calculated -antibiotic therapy in intensive care units.

With the aim to improve the quality of care for the patients by structural measures and training, he is a member in the quality circles "Organ Donation" and "Infectious Diseases" of the University Medical Center.

INHALT

Dr. med. Cathrin Theis
Senior Consultant Electrophysiology

Dr. med. Cathrin Theis has been employed at the University Medical Center since 2000.

She completed her studies in 2000. After that, she was hired as an assistant physician in the Department of Medicine 2, first led by Professor Jürgen Meyer, and then by his successor Professor Thomas Münzel.

Since 2003, she is a member of the working group Rhythmology and deals with the catheter treatment of heart rhythm disorders, and with the implantation of pacemakers and debrillator systems.

In 2006, she obtained the title of specialist in internal medicine and in 2009 the specialty title in cardiology. After that, she became a senior consultant in the field of Rhythmology.

In 2007 she obtained a research grant from the Margarethe Waitz Foundation and spent one year at the Emory University, Atlanta, USA. The focus of her residency at Emory University was on cardiac resynchronization therapy.

In 2010, she spent a 6-month internship in the Department of Electrophysiology at the University Heart Center Hamburg-Eppendorf to learn in the field of catheter ablations.

As a senior consultant she is head of the electrophysiological cardiac catheterization laboratory and performs catheter ablations of all forms of supraventricular and ventricular arrhythmias.

The focus is on interventional treatment of atrial fibrillation, but also ventricular arrhythmias in patients with and without structural heart disease are treated.

In addition, Dr. Theis performs device surgery (implantation of cardiac pacemakers and defibrillator systems).

She hopes that patients in everyday clinical routine will benefit from her knowledge and her aim is to provide the best treatment to her patients.

INHALT

Team meeting with the trainees of the 2nd Department of Internal Medicine.
From left to right: Aileen Emrich, Gabriele Maas, Melissa Hofem, Jennifer Kuckro

Gabriele Maas
Clinical Manager
Director Case Management
Course Management „Care Expert Chest Pain Unit“

Ms Gabriele Maas, nurse manager (FH), has been employed by the University Medical Center of the Johannes Gutenberg-University Mainz since 09.09.1986.

She completed her training as a nurse in 1986 at the regional hospital of St. Francis in Saarburg. Already during her training, she showed a particular interest for cardiology. In order to learn more about this discipline, she directly joined the Department of Medicine 2 at the University Medical Center of the Johannes Gutenberg-University Mainz after her exams. At first, she worked on a cardiac ward and then on a unit focusing on intensive care and detoxification.

In 1989 she had the chance to make her first experience in nursing management. The Director of the clinic at that time was Univ.- Prof. Dr. Jürgen Meyer. Professor Meyer made her nursing director of the Department of Cardiology with a mandate to restructure the ward to include intensive care beds.

This first experience in the field of human resources and project management became quickly a new passion. She pursued this passion in her daily routine by studying and consistently expanding her professional knowledge to this day.

In the following years, her responsibility was permanently expanded; she became responsible for more wards and Departments. For her, the best way to defined leadership, is described in a quote from Harvey Firestone: "The growth and development of people is the highest calling of leadership."

Ms Ingrid Henrich, then Director of nursing of the University Medical Center Mainz, encouraged her in 2005 to go on an training to become a Certified Case Manager (DGCC, DBfK in Stuttgart). Case Management, which is the process of optimizing resources in healthcare, was a relatively new concept at that time.

In 2006, the current Director of the Department of Medicine 2, Univ.- Prof. Dr. Thomas Münzel, supported her by giving her the framework for establishing a stationary case management concept and to implement it in the clinic.

Two years later, the case management concept, including admission, treatment and discharge management was successfully implemented. Up to this day, this concept is further developed and managed by Ms Maas.

As a Case Manager, she is regularly invited as a lecturer in various educational centers and nursing academies.

In 2007 Professor Münzel encouraged and supported her to complete her professional qualifications by an academic education. This was a necessary step to meet the need of a person knowledged in business administration, law in science.

In 2012, Ms Maas successfully completed her studies in nursing management with the degree "very good".

Staff development in nursing is particularly important to Ms Maas, who wrote her thesis on the topic „Management and development of medical skills“.

Theoretical knowledge and practical skills of the employees must continuously keep pace with the innovation in medicine.

To her, it is therefore essential to ensure the establishing of targeted skills and the use of existing potential in order to ensure the best possible patient care and the competitiveness of the institution.

Since 2013, Ms Maas has been responsible for the Department's nursing and physicians assistants staff. Many years of experience as an executive as well as the number of successfully completed projects qualify her for this position with her professional expertise.

As a clinic manager, her main task is to support the development in the areas of project, organizational and staff management on a strategic and operational level. In line with this, it is important to her that employees identify with the goals of the organization and that an organizational and staff development is ensured. An employee-oriented leadership following the principle "Management by Wandering Around" is also particularly important to her, and she takes particular care in being a central contact person for the doctors as well as for the other professional groups.

The special appeal of working in the Department of Medicine 2 for Ms Maas lies in the opportunity to initiate new innovative projects in close cooperation with various professional groups and to further develop the profession of nursing.

For example, the projects

- "The Department of Medicine 2 as a training institution for medical assistants" and
- "Training for nursing experts for Chest Pain Units"

have been established.

Ilka Walther

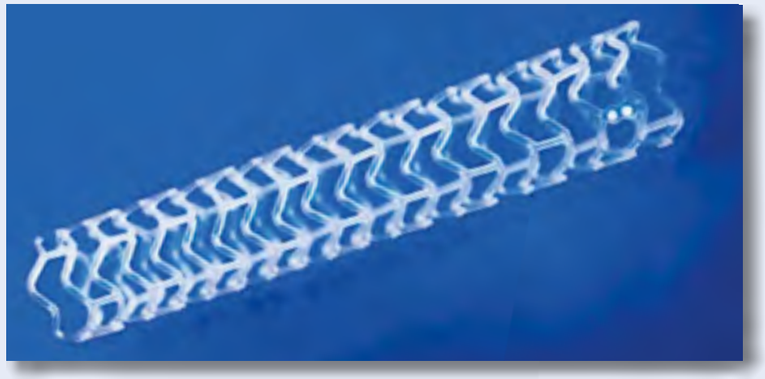
Ilka Walther is study coordinator in the center for clinical studies in the Department of Medicine 2 at the University Medical Center of the Johannes Gutenberg-University Mainz.

As a registered pediatric nurse, Ms Walther has started working in the University Medical Center in 2005, first in the Department of Urology and Pediatric Urology.

After completing a training as study nurse, she started to work in the Department of Medicine 2 in October 2009. Together with a team of study assistants, she supervises clinical trials which focus on hyperlipidemia, acute coronary syndromes and left ventricular failure. Her responsibility includes taking care of study patients, implementing trials and ensuring that they are conducted in compliance with the legal requirements and with the principles of good clinical practice.

Since November 2012, Ms Walther is study coordinator and head of the study nurses in the center for clinical studies. She is responsible for coordinating and planning the conduction of all studies in the center. Moreover, she deals with the legal department concerning contract issues. She is thus an important link between sponsors, physicians and nursing staff and the first point of contact for in- and external request.

New in Cardiology



An absorb scaffold: the structure of this stent is completely biological; the scaffold is reabsorbed within three years after implantation, leaving no foreign body behind.

Heart catheter

Absorb bioresorbable scaffolds

Author: T. Gori

Absorb bioresorbable scaffold systems have recently been introduced in the European market for the treatment of coronary artery stenoses. The ABSORB (Abbott Vascular, Santa Clara, CA, USA) device consists of a polymer of poly-L-lactide, a derivate of lactic acid.

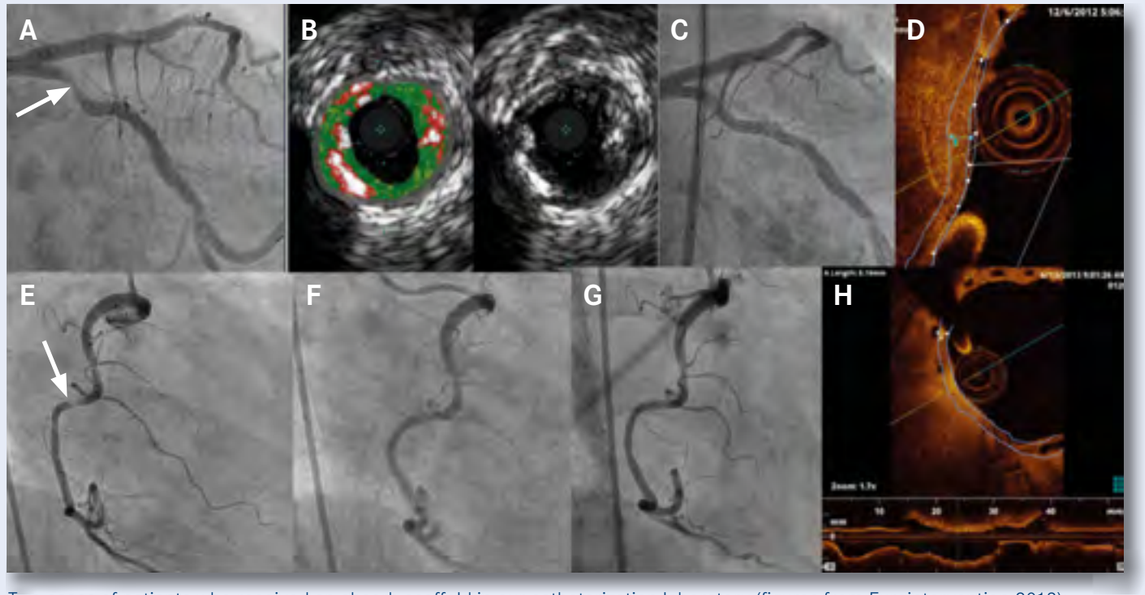
The advantage over traditional metallic stents is that the polymer that composes the structure of the Absorb is completely biocompatible, and is reabsorbed within three years after implantation. This results in less inflammation of the vessel, and it gives the vessel the chance to retur to its normal physiology.

The first implantations of Absorb scaffolds have been reported in 2004 – 2005, but the device came to the market only at the end of 2012. The Department of Medicin 2 has been from the very beginning one of the leading centers in the use of these devices worldwide. Our work with absorb has been published in important journals (Journal of the American College of Cardiology, Journal of the American College of Cardiology: Cardiovascular Interventions, and Eurointervention, in the latter case with an editorial of Professor Serruys, the Editor in Chief of the Journal and one of the most famous cardiologists in the world).

As compared to traditional metal stents, which cannot be resorbed and remain implanted life long, Absorb scaffold disappear three years after implantation, leaving nothing behind but a healthy vessel. Previous studies have indeed shown that, in cases of stable plaques, the vascular wall behind the implanted Absorb undergoes a remodeling that is associated with features of plaque sealing and increased plaque stability.

These concepts are particularly attractive in patients with acute coronary syndromes, where the rupture of a plaque causes transient vascular obstruction. In this context, implantation of an Absorb could improve plaque stability. Once the plaque is "sealed" (figures on the next two pages), there is no need for a mechanical support anymore. We reported our data, demonstrating a good clinical outcome after implantation of Absorb in patients with acute coronary syndromes at EuroPCR in Paris in May 2013, at the meeting of the European Society of Cardiology in Amsterdam in September 2013, and at several other meetings thereafter. In this paper, we showed that the implantation of Absorb scaffolds is at least as safe as that of traditional second generation metal stents, with a low rate of complications and good procedural outcomes. Since this is a new therapy, all patients who receive an Absorb scaffold in our Laboratory are followed up regularly by telephone or in our clinic.

Currently, more than 600 Absorb scaffolds have been implanted in our clinic, making it one of the most advanced ones in the world in this area, and the leading one in Germany. The word is spreading among patients, and several ones have already asked expressly for this type of treatment. We are very proud of being at the forefront of what has been called a new revolution in cardiovascular medicine.



Two cases of patients who received an absorb scaffold in our catheterization laboratory (figures from Eurointervention 2013):

Panels A-D:

A: A 70-years old woman with unstable angina and a thrombotic lesion in the proximal circumflex coronary (A).

B: Intravascular ultrasound confirmed the presence of multiple layer of dense calcium and necrotic core (B).

C, D: 6 months after implantation of an Absorb 3.0 x 18 mm scaffold (C), optical coherence tomography (D) showed that the same (subintimal, calcified) lesion was covered by a ~170 microm-thick neointimal layer within and around the scaffold struts.

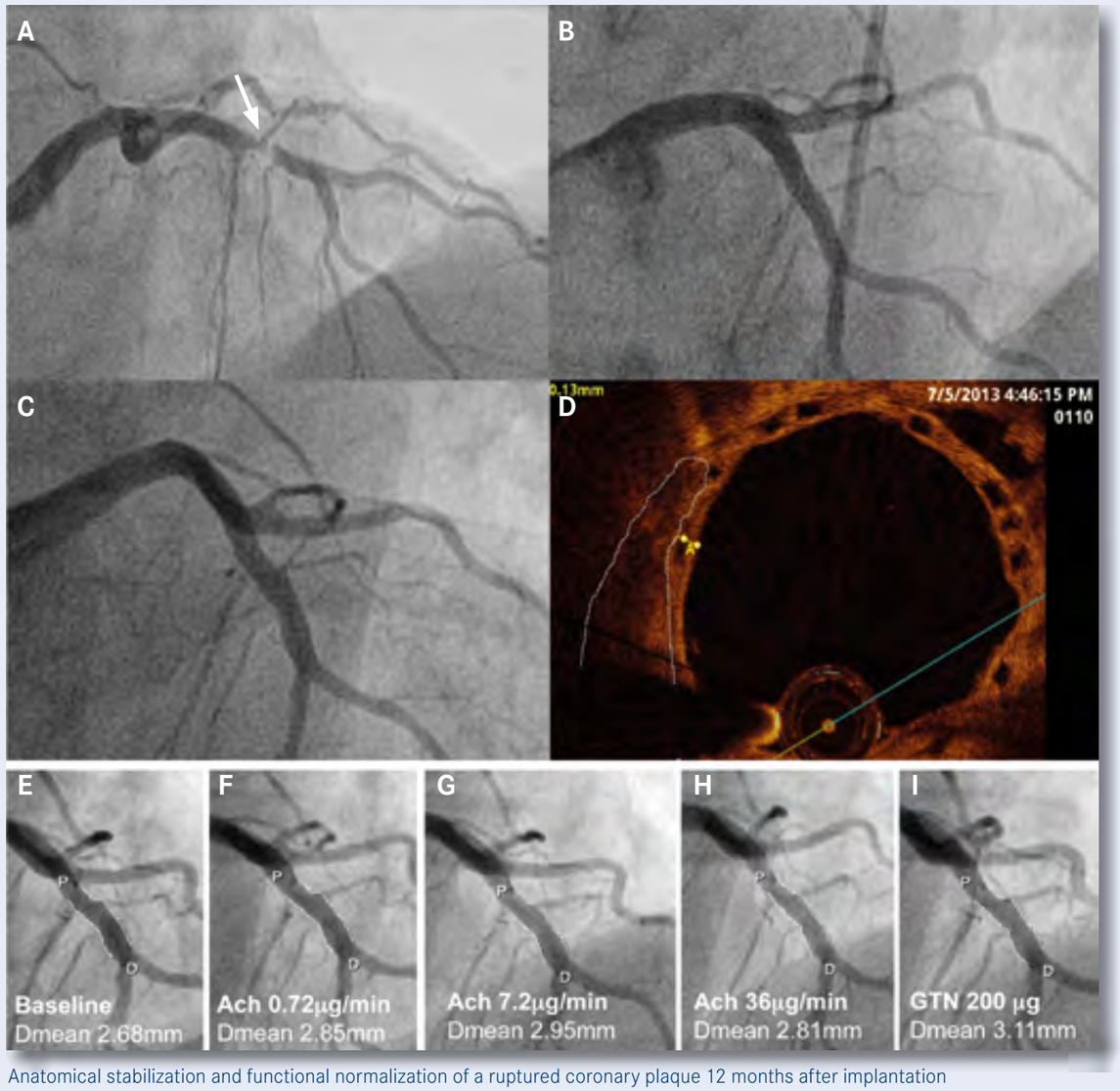
Panels E-H:

E: A 40-years old woman with NSTEMI and a thrombotic lesion in a tortuous right coronary with a ~90° angle (E).

F, G: A 3.0x18mm Absorb scaffold was implanted successfully (immediate result (F) and 12-months control (G).

H: OCT (H) showed a ~170microm-thick neointimal layer covering a large (~110° arch) subintimal fibroatheroma

(published in Eurointervention 2013)



Anatomical stabilization and functional normalization of a ruptured coronary plaque 12 months after implantation of a bioresorbable scaffold.

A. Right cranial view of the proximal LAD showing intravascular thrombosis.

B. following implantation of a 3.0x18mm bioresorbable scaffold.

C. 12-months follow-up. D. 12-Months OCT follow-up demonstrating neointimal growth (130mm of thickness) on the surface of a subintimal fibroatheroma (dotted line).

E-H: Dose-dependent vasodilation in response to acetylcholine and nitroglycerin administration demonstrating improved coronary physiology 12 months after the acute coronary syndrome. The infusion of nitroglycerin (I) also caused a vasodilation

(figures from JACC: Cardiovascular Interventions 2013).

Atrial appendage occluder

Author: T. Gori

An LAA closure device (Watchman, source Boston Scientific).

Interventional atrial appendage closure

Patients who have atrial fibrillation (a very common form of heart rhythm disease) and who have problems with a therapy with warfarin or other anticoagulants, have now a new option. Since two years, the Department of Medicine 2 offers for these patients the possibility to undergo a procedure which will free them from the need of a therapy with anticoagulants. This herapy is called closure of the left atrial appendage, and is carried out using a catheter.

This minimally invasive implantation, which is conducted by two experienced physicians who are certified for his procedure (consultants Prof. Dr. Tommaso Gori and Dr. Stephan von Bardeleben), only takes as little as 20 – 30 minutes and only requires a local anaesthesia of the groin. The only vascular access that is necessary for this implantation is a 4-mm cut of the femoral (groin) vein. Through this access, our physicians can push catheters into the right heart, and, after puncture of the so-called interatrial septum, into the left atrium of the heart. This procedure is conducted under 3D-echocardiographic and RX-monitoring by Dr. Philipp Nikolai.

As soon as one month after the procedure, the patient can safely interrupt his therapy with anticoagulants.

This procedure was performed in more than 60 patients to date in Mainz, and in 10 of these cases we could successfully implant the device without any use of contrast medium, which protects the kidneys from the so-called contrast-induced nephropathy. A contrast-free implantation of left atrial closure devices is a true specialty of Mainz, and we are very proud of leading this progress. As well, the closure of the left atrial in patients who also receive a percutaneous intervention for heart valve diseases is a specialty in Mainz, and we published our first report of this type of treatment in 2012.

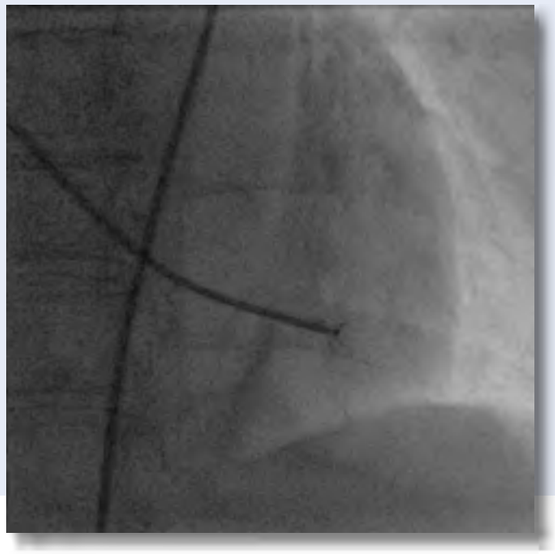
Data on this procedure are very promising. A large international multicentric Study, the so-called PROTECT AF-Study, has shown that the implantation of the device carries the same risks as the use of anticoagulants such as warfarin; 45 months after the implantation of the device, the rate of cardiovascular and cerebrovascular events was significantly lower in the patients who had received the LAA closure: for instance, stroke was reduced by 40 % and patient's mortality by 34 % as compared to warfarin. Altogether, 707 patients were included in this study in 59 centers. The authors of this research, published in Lancet and Circulation 2009 and 2013, conclude that LAA closure is safer and more effective than therapy with anticoagulants like warfarin. Importantly, the advantage increases over time, and it becomes more and more evident at 2 and 4 years after the implantation. The safety and efficacy of the procedure is now being confirmed in a registry, to which Mainz takes part.

Patients and referring physicians who are interested in this procedure can contact the offices of Professor T. Gori and Dr. S. von Bardeleben (Frau Gosse and Frau Walther/Ersoy telephone numbers shown in the right column). The implantation requires a hospital stay of 2 nights, but the patients can stand up from bed only a few hours after the procedure.

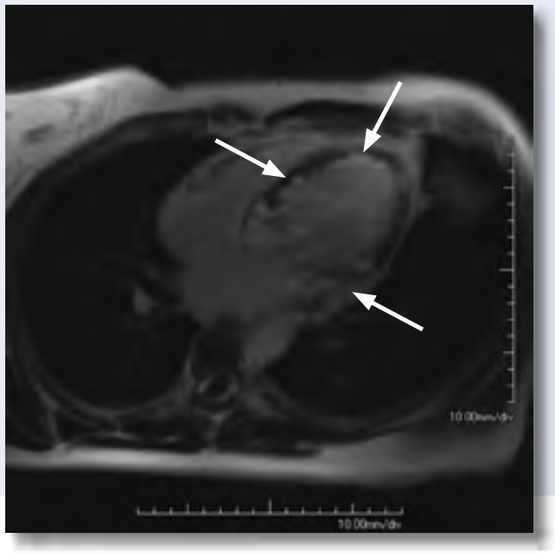
The team

- **Senior Consultant**
  Professor T. Gori
  Dr. med. S. v. Bardeleben
- **Physician**
  Dr. med. P. Nikolai
- **Office**
  Ms Gossé
  Phone +49 (0) 6131 17-6903
  and
  Ms Walther/Ms Ersoy
  Phone +49 (0) 6131 17-2385

Open biopsy forceps in the left ventricle of the heart under X-ray fluoroscopy.



MRI image of the heart with marked inflammatory changes (light districts, see white arrows) in the heart muscle of the left ventricle.



Update heart failure: improved diagnosis and treatment for patients with heart failure of unknown origin

Author: E. Schulz

Chronic congestive heart failure is the third most common cause of death and the leading cause of hospital admissions in Germany.

Although heart attacks are the most common cause of heart failure, a significant portion of patients develop heart failure in response to inflammation (myocarditis) or storage diseases (e.g. amyloidosis). In order to improve the diagnosis of unexplained heart failure, we have formed a new interdisciplinary heart failure team in the beginning of 2013. An integral part of the diagnosis is the painless removal of samples from the myocardium of the left or right ventricle (left ventricular / right ventricular endomyocardial biopsy) with a small biopsy forceps (Figure above left), whenever coronary heart disease was previously ruled out by angiography. In cooperation with the Institute for cardiac diagnosis and therapy of Berlin – an internationally accredited laboratory specialized in the processing of endomyocardial biopsies – it is often possible to reveal the underlying cause of heart failure (Table 1), and sometimes (as in the case of myocarditis) we can offer the patient a specific therapy.

For the initial diagnosis, but also for follow-up, all patients receive an echocardiogram and a cardiac MRI in parallel; both methods have an exceptionally high, long-term expertise in our Department (Figure above right). In collaboration with the Unit of Electrophysiology, we also perform a risk assessment that comprises imaging modalities, biopsy, and ECG findings in order to identify patients at increased risk of sudden cardiac death, which may result in the supply of a LifeVest or an implantable cardioverter / defibrillator (ICD).

In summary, together with imaging modalities (echocardiogram, cardiac MRI), endomyocardial biopsiy, and electrophysiology we now offer all patients with heart failure a comprehensive diagnostics at the highest level. This helps us to identify the underlying cause of the disease, which in turn may allow us to initiate a custom-made heart failure therapy.

Table 1:
Specific causes of heart failure in myocardial biopsies from 42 patients at the University Medical Center Mainz since January 2013 (as of 30.08.2013):

Cause	n	Treatment options
Parvovirus B19	10	(antiviral therapy in clinical studies)
Coxsackie-Virus	1	(ß-interferon therapy)
Inflammation without virus genome	6	(Immune suppression)
Giant Cell Myocarditis	1	(Immune suppression)
Amyloidosis	3	
unspecific (Ø Virus, Ø Inflammation)	21	
Total	42	

Conducting a myocardial biopsy: PD Dr. P. Wenzel and PD Dr. E. Schulz

The team

- **Leading senior consultants**
  PD Dr. Eberhard Schulz
  PD Dr. Philip Wenzel
- **Senior consultants**
  Prof.-Dr. Ulrich Hin
  Dr. Alexander Jabs
- **Medical Staff**
  Dr. Andreas Bender
  Dr. Thomas Jansen
  Dr. Kai-Helge Schmidt
  Efthymios Sotiriou
- **Staff cardiac MRI**
  Dr. Nico Abegunewardene
  Dr. Kai-Helge Schmidt
  Prof.-Dr. Karl-Friedrich Kreitner
  (Radiology department)
- **Staff Electrophysiology**
  Dr. Hanke Mollnau
  Dr. Torsten Konrad
- **Contact case management**
  Phone +49 (0) 6131 17-2633
  Fax +49 (0) 6131 17-5532

Program Directors PD Dr. Philip Wenzel, PD Dr. Eberhard Schulz

Renal Sympathetic Nerve Ablation for Uncontrolled Hypertension

Author: A. Jabs

Hypertension is the world-wide number one risk factor for mortality according to the WHO Global Burden of Disease Study.

In patients with cardiovascular disease, blood pressure control is essential to prevent progressive diseases including heart attacks, strokes and renal dysfunction. Therefore, the German Hypertension Society recommends adjusting anti-hypertensive therapy to the overall patient risk, which means that the individual target blood pressure for each patient has to take individual risk factors, for example diabetes, into account. Hence, with increasing cardiovascular risk, blood pressure control often requires multi-drug pharmacotherapy to achieve optimal treatment goals.

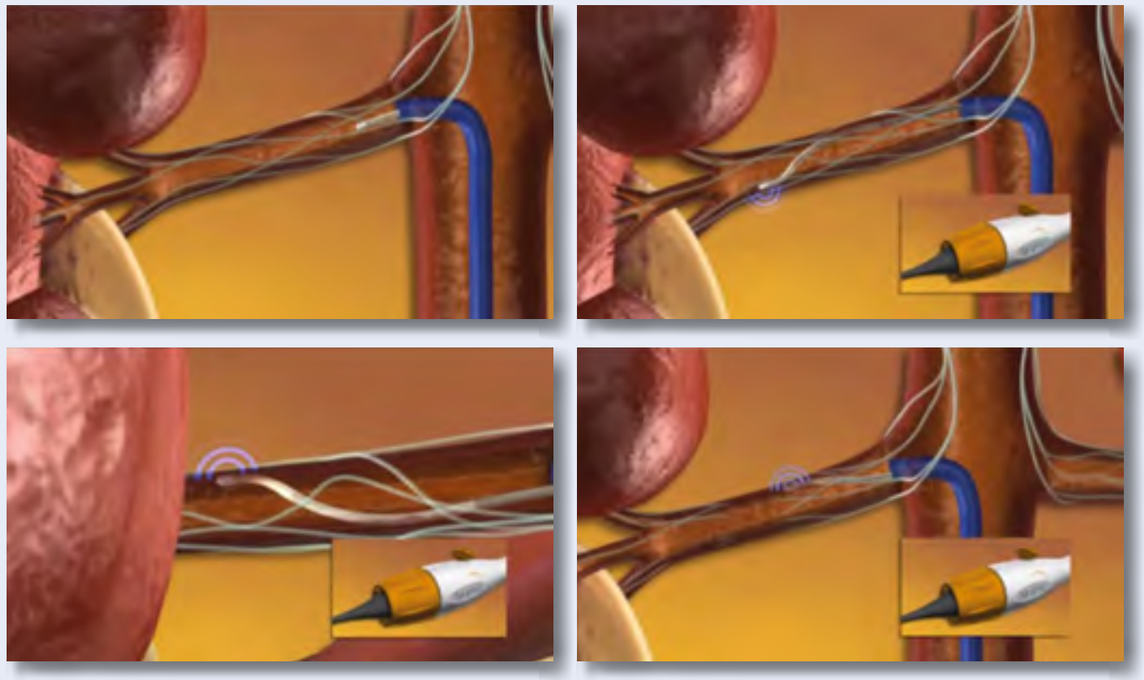
Unfortunately, as much as one third of all patients have resistant arterial hypertension, i.e. poor blood pressure control despite multiple drugs (three or more medications). For these patients, the Department of Medicine 2 offers a treatment based on renal sympathetic-nerve ablation (also called "renal denervation" or RDN). RDN is a minimally invasive, endovascular catheter-based procedure using radiofrequency ablation. By applying radiofrequency pulses to the renal arteries, fine nerves in the vascular wall (adventitia layer) can be denervated. This causes reduction of renal sympathetic afferent and efferent activity and blood pressure can be decreased. Data from international clinical trials demonstrate long-term blood pressure lowering in approximately 3/4 of all treated patients. Since 2007, over 4000 patients worldwide have undergone catheter based renal denervation. To further increase the knowledge regarding safety and success of this therapeutic procedure, the Department of Medicine 2 participates in several international scientific investigations on RDN. These will include several thousand patients with up to five years follow-up checks. Professor Münzel is the nation-wide coordinator of one of these investigations.

RDN has been conducted in our clinic since more than three years, employing different ablations systems (see figures). It has to be pointed out that, to date, we have seen no relevant complications or long-term damage in any patient, not least owing our thorough and extensive pre-interventional screening tests. These tests are conducted to exclude specific rare causes of hypertension, and to define and discuss the optimal RDN strategy with individual assets and drawbacks for each patient. If the patient is eligible for RDN, the interventional treatment is then conducted during a short in-patient treatment. Follow-up checks are offered in our special consultation hours to verify successful treatment and control blood pressure effects.

The Team „Renal Denervation Therapy“ of the Department of Medicine 2

- **Head**
  Dr. A. Jabs
- **Vice-head**
  Prof. Dr. U. Hink
- **Physicians**
  Dr. Z. Bárdonicsek
  Dr. V. Gall
- **Team Assistant / Front desk**
  D. Benner
  Telefon +49 (0) 6131 17-7267
  Telefax +49 (0) 6131 17-5532

EnligHTN® System (St. Jude Medical) for renal denervation therapy



Using a special ablation catheter (here: Medtronic Symplicity® Catheter), radiofrequency energy is applied at several sites along the renal arteries. This denervates sympathetic nerve fibers, and blood pressure decreases.

Cardiac catheterization: access via the artery of the wrist (transradial access) — safer and more convenient for our patients

Author: E. Schulz

In our clinic, more than 3,000 cardiac catheterizations ("coronary angiography") are performed each year.

Overall, the rate of serious complications is very low. Among these, however, post-operative bleeding at the puncture site in the groin is a serious issue. Bleeding complications occur much less frequently when the "main artery" of the wrist (radial artery) is used to access the vasculature.

In order to improve the safety of our patients, we have therefore changed the access route for cardiac catheterizations at the University Medical Center Mainz : Whenever possible, the so-called trans-radial access (ie using the right or left wrist) is now selected.

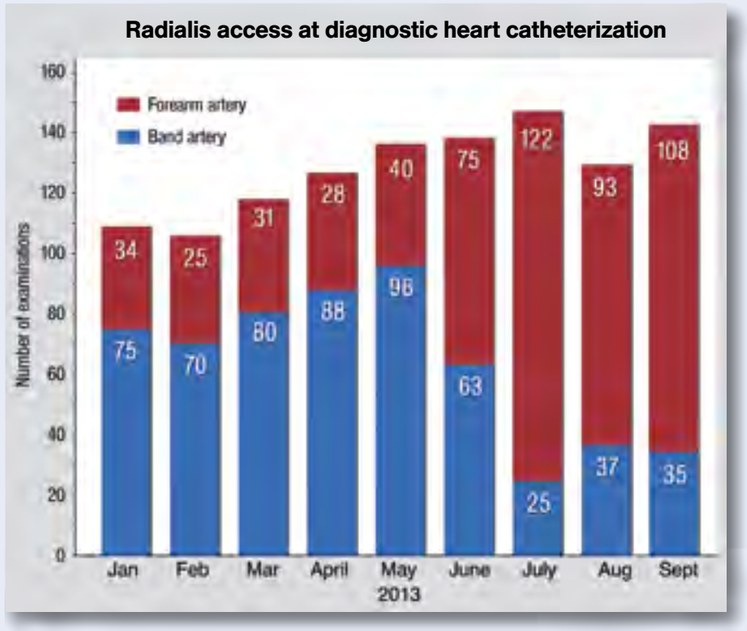
This approach also has the advantage that patients can stand up immediately after the procedure (in contrast to the femoral access via the groin, which requires a bed rest up to 6 hours). As soon as the cardiac catheterization through the radial artery is completed, a small transparent tape remains for 4 – 6 hours on the wrist (see picture above). After this period, a stable clot has formed at the puncture site and no bleeding occurs.

In their current practice guidelines, the European Society of Cardiology recommends the transradial access even for catheter interventions during acute myocardial infarction in order to minimize the rate of bleeding complications.

At the University Medical Center Mainz, we have now increased the rate of transradial access for coronary angiograms / Interventions from originally < 30 % to ~ 70 % of all procedures (see figure) and aim to increase it further.

Even for the treatment of acute myocardial infarction, we already use the safer and more patient-friendly transradial access with great success.

A plastic band is placed around the wrist after completion of the procedure to avoid bleeding. The strip is left for 4-6 hours, and can then be safely removed.



Department of Electrophysiology

Ablation catheter

The Team of the Electrophysiology

Department of Electrophysiology

Authors: C. Theis and Th. Rostock

The department of electrophysiology is an independent section of the Department of Medicine 2 at the University Medical Center Mainz. The department consists of 5 senior consultant electrophysiologists and 4 clinical/research fellows.

The department of electrophysiology offers all contemporarily established treatment options for slow and fast heart rhythm disorders. Moreover, an intensive clinical research program for the development of new technologies for the treatment of atrial fibrillation and ventricular tachyarrhythmias is carried on, thereby providing our patients always the best treatment options.

Annually, we perform more than 800 electrophysiological procedures, including more than 750 catheter ablations. The vast majority of ablations are performed for the treatment of atrial fibrillation (approximately 500) and ablations for ventricular tachycardias in patients with and without structural heart disease. The electrophysiological catheter laboratory is equipped with sophisticated three-dimensional mapping systems including the Ensite/NavX system and the CARTO3 system. Virtually all kind of cardiac arrhythmias are treated, including highly complex epicardial ablation procedures in patients with ventricular tachyarrhythmias.

The department of electrophysiology provides a large program of device-based therapies for brady- and tachyarrhythmic heart rhythm disorders. Approximately 500 cardiac rhythm devices are implanted annually, with 100 systems for cardiac resynchronization for the treatment of congestive heart failure and prevention of sudden cardiac death.

In our outpatient department, we offer a daily consultation for patients with cardiac arrhythmias and cardiac rhythm devices. More than 2800 patients with heart rhythm disorders (the majority of them with atrial fibrillation) and more than 3500 patients with cardiac devices are annually treated in our outpatient department.

Moreover, the department of electrophysiology has a specialized outpatient consultation for pediatric patients with cardiac arrhythmias and for patients with hereditary cardiac channelopathies (i.e. long-QT syndrome, Brugada syndrome, early repolarization syndrome etc).

For further information, please contact the following address:

Prof. Dr. Thomas Rostock
Department of Electrophysiology
Department of Medicine 2

University Medical Center of the
Johannes Gutenberg-University Mainz

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Phone +49 (0) 6131 17-7218
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INHALT

Chest Pain Unit

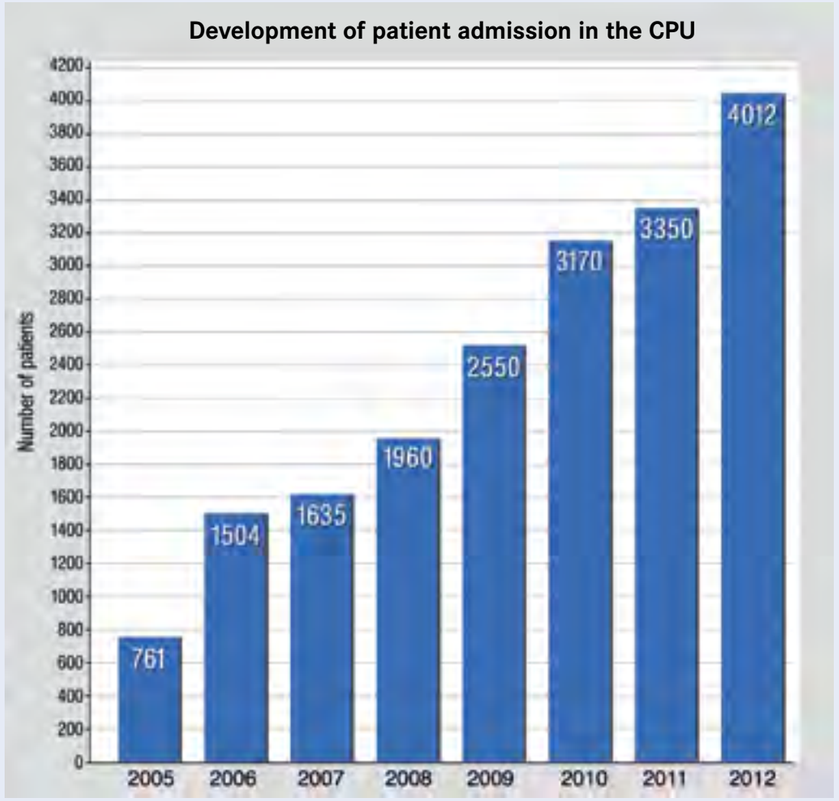
A Chest Pain Unit (CPU) is an emergency unit dedicated to the diagnosis and first treatment of patients with unexplained chest pain. In the past, there were no quality standards for these facilities, so the German Society of Cardiology (Deutsche Gesellschaft für Kardiologie (DGK) has established criteria for the operation of CPUs and, accordingly, performs a certification process of interested clinics and hospitals to establish a uniform standard.

A **"Chest Pain Unit" certified by the DGK** is now a registered trademark.

More and more Chest Pain Units in Germany are applying for this certification.

Meanwhile, 185 CPUs in Germany have been certified according to the criteria of the DGK and have received the seal of approval. More than 90 of those CPUs have been recertified, i.e. they have been checked again after a predetermined period of three years.

This is important for the CPUs in order to document their quality, but it is also important for the German Society of Cardiology, hence the term "Chest Pain Unit – certified by the DGK" is becoming a high quality standard throughout Germany.



The graph shows the ever increasing number of patients, medicated in the Chest Pain Unit Mainz

INHALT

Chest Pain Unit

The Mainz CPU has developed magnificently and is more and more a figurehead for the Department of Medicine 2.
In a scientific analysis we were able to demonstrate that the treatment of myocardial infarction in the CPU leads to a better prognosis than a normal emergency department without CPU. Due to the fact that there is only one CPU in Mainz, Mainz patients have the advantage that they know where to call when chest pain occurs. The cooperation with the cardio practice Mainz has also proved to be of advantage.

The emergency cardio practice clinic, CARDIOAKUT, is right beside our Chest Pain Unit. When a patient presents in CARDIOAKUT and it turns out that an acute myocardial infarction is present, the patient can be transferred immediately to the Chest Pain Unit, which is located next door and the patient will be further diagnosed by a diagnostic cath.

This optimal interface between outpatient and inpatient care of patients with **Acute Chest Pain** brought a marked improvement in the prognosis of patients with acute myocardial infarction in and around Mainz well above average in Rhineland-Palatinate.

"Chest Pain Unit goes Europe"— in Zurich the first European Chest Pain Unit was certified

The German and the Swiss Society of Cardiology jointly certified on 17th April 2013 the first Chest Pain Unit abroad in **The University Hospital Zürich** (Head Professor Thomas Lüscher).

In this unit, patients who are admitted to hospital with a suspected acute coronary syndrome (heart attack or other sudden circulatory disorders of the heart muscle) are examined in a structured and detailed way. In the CPU, cardiologists clarify the etiology (reason) of the chest pain, and start the correct therapy quicker and more accurately than in a normal emergency ward, working closely together with the cardiac catheterization laboratories of the University Hospital, where acute catheterizations can be performed.

If investigations confirm a suspected heart attack, the patient receives further treatment in the hospital. The time from onset of symptoms to initiation of treatment with medication and a catheter intervention with balloon or stent plays a major role in the management of heart attack patients.

A specialized CPU guarantees that the time of diagnosis is as short as possible. Thus the survival rate will be improved. Moreover, work load in the emergency department is considerably relieved by the Chest Pain Unit.

The certification of the CPU by the experts of the German and the Swiss Society of Cardiology confirmed that the department fully meets the requirements for the treatment of patients in organizational, medical and nursing terms.

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The CPU Team in Zürich and the experts from the German Society of Cardiology
(from left to right) Ms Judith Schürmeyer, Professor Thomas Lüscher, Dr. Winfried Haerer, Professor Francois Mach, Professor Thomas Münzel, Professor Ulf Landmesser, Professor Georg Ertl, Dr. Christian Templin, Barbara Schwab, Marco Serra, Cornelia Erne-Steiger

The campaign was started with a press conference in October 2013
(from left to right:
Professor Thomas Münzel,
Harald Strutz (1. FSV Mainz 05),
Birgit Härtle (Boehringer Ingelheim)
and Dr. Michael Todt (Cardiopraxis)

New Chest Pain Unit Awareness Campaign — Offensive against chest pain in Mainz

Author: A. Mänz-Grasmück

Approximately 40 % of patients who suffer a heart attack die before the arrival of an emergency doctor.

The main reason for this is that patients let pass too much time before they alert emergency services. The best result can be achieved when the treatment of myocardial infarction begins within one hour ("golden hour") after experiencing the first signs of chest pain. In fact, however, the average prehospital time in Germany, i.e. the time from the onset of complaints up to arrival at the hospital, is 225 minutes.

By far the largest proportion of prehospital delay is caused by the patient himself. Studies have shown that the behavior of patients and people who attend an emergency "improves" after educational awareness campaigns. Patients are seeking help more quickly and effectively if awareness campaigns and information sessions have been held.

The large banner from October 2013 on the back side of building 701, University Medical Center, can be easily seen from the Langenbeckstraße.

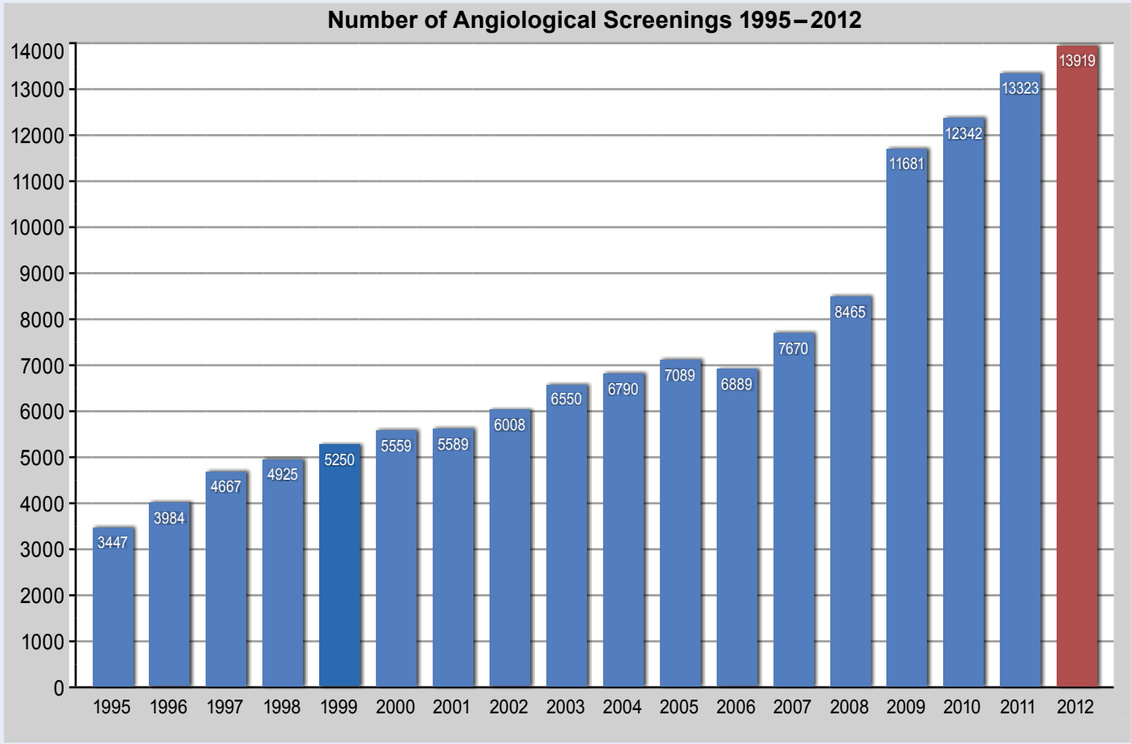
That's why there is a continuous need of more and more efforts to inform the General population.

To this scope, the Department of Medicine 2 and the University Medical Center Mainz have successfully conducted several regional awareness campaigns on heart attack and Chest Pain Unit (CPU) together with the Cardiopraxis (outpatient clinic), the Foundation Heart of Mainz, the German Heart Foundation, the German Society of Cardiology, and in cooperation with 1. FSV Mainz 05 and Boehringer Ingelheim. Other supporters of this action are Abbott Vascular, the Federal Ministry of Education and Research, the Center for Thrombosis and Hemostasis, the Gesundheitsregion Rheinhessen (Health Region Rheinhessen), and the charity iniative of the 1. FSV Mainz 05, "Mainz 05 eV Helps".

The posters of this year's campaign can be seen as a large banner on building 701, University Medical Center and on buses of the city of Mainz.

Buses with banners of the campaign

Angiology



Increase of angiolocial screenings from 1995 to 2012

Duplex ultrasound examination of the carotid arteries
(left to right) Prof. Dr. C. Espinola-Klein (Director Angiology dept.) Dr. G. Weißer (Senior Physician Angiology).

Angiology: Update

Author: C. Espinola-Klein

In internal medicine, Angiology is the field dedicated to the detection and treatment of diseases of the arteries, veins and lymphatic vessels. The term "Angiology" comes from the Greek and derives from the words "Angio" (= the vessel) and "logos" (= teaching). Accordingly, Angiology is the study of the vessels, or the doctrine of everything that flows.

Angiology is a diverse field, in which the interdisciplinary collaboration with colleagues in other fields is a crucial aspect.

The department enjoys a high national and international reputation and is a reference center in particular in the diagnosis and conservative treatment of vascular diseases.

Since a vascular involvement is an important aspect of many diseases, patients are treated together with other medical disciplines from the University Medicine Center Mainz. But this also means that in many diseases, an additional angiological diagnosis is necessary. By a competent examination, angiology specialists can determine if a particular disease is due to a disorder of the arteries, veins, or lymphatic vessels. That is the only way to treat the patients individually and to avoid unnecessary additional examinations.

Given the population growth, the number of patients with vascular disease increases constantly, which is impressively reflected in the annually increasing number of angiological examinations.

In 2012, we had around 14.000 checkups of neck, arm, leg or abdominal vessels (Figure page 47). This amount includes medical investigations of vascular changes by duplex sonography, and also measurements of vascular function, for example by means of cw-Doppler sonography, oscillography and treadmill ergometer.

The key method in the diagnosis of vascular diseases is the duplex ultrasound. With this method, you can visualize the vessel wall and detect pathological changes like arteriosclerosis or clots. Furthermore, the blood flow in the vessels can be measured, and you can determine the degree of a stenosis. By this accurate diagnoses, a treatment plan can be established.

The photo above shows the duplex ultrasound examination of the carotid arteries with early signs of atherosclerosis.

Presentation of the certificate by (from left to right) Prof. Dr. T. Münzel (Director of the Department of Medicine 2), Prof. Dr. C. Vahl (Director of cardiothoracic surgery), Prof. Dr. C. Espinola-Klein (Director of Angiology), Prof. Dr. N. Pfeiffer (chief medical officer), Prof. Dr. C. Düber (Director of Radiology), PD Dr. B. Dorweiler (Head of vascular surgery).

Highlights of the year

The high quality of the care of vascular patients in the University Medical Center of Mainz was certified by "Triple certification as a vascular center" (pictured above).

This is the joint certification by the German Society of Angiology (DGA), German Society for Vascular Surgery (DGG) and German Radiological Society (DRG). Only those who meet the extensive requirements of all three societies can receive this award. Less than 40 clinics in Germany have been certified based on these quality criteria.

A special highlight in 2012 was the hosting of the 41st Annual Meeting of the German Society of Angiology from 12th to 15th September, under the presidency of Prof. Dr. med. C. Espinola-Klein, with the motto "Go with the flow" (picture below). The congress, held for the first time in Mainz during its 40-year history, was one of the most successful annual meetings of the German Society of Angiology with about 900 participants.

The main topics were new research aspects concerning peripheral arterial disease and venous thromboembolism.

Official opening ceremony of the 41st annual meeting of the German Association of Angiology on 12/09/2012 in Mainz

Big interest at the patient's day on 15/09/2012, the topic was "healthy vessels"

Handover of the donation cheque on 31/10/2012 in front of Christophorus Hospice Mainz. (from left to right) Prof. Dr. C. Espinola-Klein (Director of Angiology), Michael Schwarz (Christophorus Hospice) and Dr. Angelika Walz (Boehringer Ingelheim)

Numerous national and international researchers experts in vascular medicine were hosted. In addition to an extensive scientific program with main sessions, keynote lectures, seminars and workshops for doctors and scientists, there were training opportunities for medical professionals, nursing staff and physiotherapists.

The program also included various offers for patients. Like a telephone campaign on "circulatory disorders of the legs", and a patient's day under the motto "Healthy vessels" was organized (photo above left).

The congress was rounded by a fundraising event, the first "Angio Run", where donations were collected, together with Boehringer Ingelheim, for the Mainz Christopher's Hospice (photo above right).

The Team

The angio team consists of 14 employees.

- **Medical Director of Angiology**
  Univ.-Prof.
  Dr. med. Christine Espinola-Klein
- **Medical Deputy**
  Dr. med. Gerhard Weißer
  Dr. med. Markus Vosseler
- **Physicians**
  Dr. med. Andreas Bender
  Dr. med. Jörn Frederik Dopheide
  Dr. med. Kerstin Hoffmann
  Dr. med. Andrea Hoppen
- **Medical assistants**
  Kyung-Suk Yoo (head of team)
  Dorit Berz
  Karina Havlicek
  Petra Bäthies
  Sümeyra Akbulut
- **Head Office**
  Silvia Kranz / Medine Tunc
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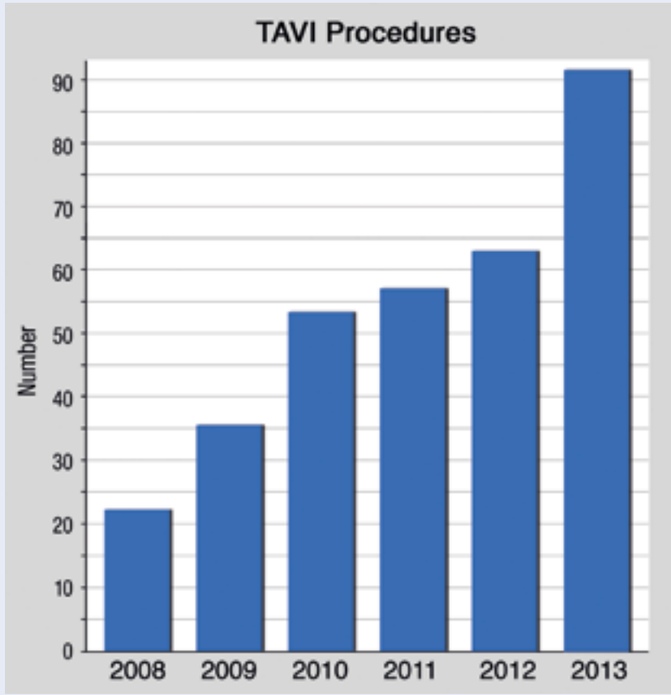
The Angiology Team

Interventional Valve Therapy



Development of Transfemoral Aortic Valve Implantations (TAVI) in Mainz

Prof. Dr. med. Ulrich Hink, Chief of Interventional valve therapy

Interventional valve therapy

Author: U. Hink

In addition to the established cardiac catheterization procedures for the treatment of coronary artery stenoses, the new field of "valvular interventions" has evolved lately. These procedures have been carried out since the end of the year 2007 in the Department of Medicine 2.

In the beginning, balloons in sizes of 2 – 3 cm were used to widen the stenosed mitral- or aortic valve to allow a temporary symptom relief in high-risk patients.

Since summer of 2008, prosthetic heart valves have been implanted in Mainz by the use of catheters, allowing a permanent cure of the heart conditions as an alternative to traditional heart surgery.

Since then, the "outlet-valve" of the left ventricle can be completely replaced with a biological heart valve in appropriate patients with a simple puncture of the femoral artery - the so-called TAVI or Transcatheter Aortic Valve Implantation.

On top of these TAVI procedures, we began in 2010 to treat leakages of the mitral valve with a small metal clip, the so-called Mitra-Clip®, that reduces valvular defects by attaching diseased leaflets together.

Thus, the two most common valvular heart diseases, aortic stenosis and mitral regurgitation, may be treated by catheter intervention in suitable patients. In addition, more and more often these catheter techniques can be used to treat adults with congenital heart defects, such as pulmonary valve stenosis. These patients are cared for by Dr. med. von Bardeleben in the ACHD / EMAH outpatient clinic. Dr. von Bardeleben is board-certified for the treatment of **A**dults with **C**ongenital **H**eart **D**isease.

The ever increasing number of valve procedures (see figure on previous page) fed into the establishment of a "Department of Interventional Heart Valve Therapy" in 2010 within the Department of Medicine 2. This department is embedded in an interdisciplinary network, which comprises the Departments of Cardiothoracic and Vascular Surgery, Anesthesiology and Radiology. Crucial for the development of these novel techniques has been the expansion of intermediate and intensive care capacities (IMC and ICU ward 2A), which is headed by our senior physician Dr. med. Felix Post.

Transcatheter Aortic valve implantation (TAVI)

Changes in the catheter-based treatment of valvular heart disease

Meanwhile, our division of "Interventional Heart Valve Therapy" represents an important new area within our cardiology department. The two most common valvular diseases in adulthood, the aortic valve stenosis (narrowing of the "outlet valve" of the main chamber of the heart) and mitral regurgitation (leakage of the corresponding "inlet valve"), can be treated with the help of a catheter, which is about the thickness of a regular pen. Thus, a classic open-heart surgery can be dispensed in approximately one half of the patients in need for aortic valve replacement.

This is particularly advantageous in older patients with comorbidities, since they often have been declined for a surgical treatment due to a high intraoperatory risk.

The lack of the occurrence of wound pain is a further major advantage of the method leading to a faster mobilization of frail patients, who may, therefore, return to the familiar surroundings more quickly.

INHALT

The interventional valve therapy team

Due to the rapid development and the very encouraging clinical success of this new field, these interventions are now being performed on three days per week in our cardiac catheterization laboratory in a close cooperation between the Department of Medicine 2 and the Departments of Heart Surgery and Anaesthesiology.

By a further significant increase in the number of valvular interventions, the team has grown in recent years:

- In this year, **Germany's first W2-Professorship for "Interventional Heart Valve Therapy"** at the University Medical Center Mainz was established. The position was taken by Prof. Dr. Ulrich Hink.
- The interventional cardiology team comprises senior physicians Dr. Alexander Jabs, Dr. Stephan von Bardeleben, and Dr. Felix Post as well as senior physicians (cardiac surgery) Dr. Nalan Schnelle and Dr. Walther Kasper-König.
- For the first time, Dr. Frank Schmidt worked this year in full-time position in charge of screening, planning and follow-up visits of heart valve patients.
- The team was further supported by Mr Jens Besant, Germany's first "TAVI Nurse", in charge of escorting our heart valve patients from the initial preclinical outpatient visit along to the discharge as well as during the actual procedure itself. He discusses the patient's social needs and nursing conditions in order to ensure an individually tailored follow-up plan after the intervention.
- The success of treatment is being followed in our "heart valve outpatient clinic" by our team coordinator Ms Benner and Dr. Hellbauer, Dr. Czyz and Dr. Hempel.

Transcatheter aortic valve implantation (TAVI) in patients with aortic valve stenosis

With more than 300 TAVI catheter interventions, the Mainz University Medical Center is one of the reference centers in Germany. Our center is characterized by the fact that all patients are discussed and treated by an interdisciplinary team of cardiologists, cardiac surgeons and anesthesiologists. The positive impact of this patient – oriented approach is reflected in our high-level ranking of the nation-wide quality register ("Deutsches Aortenklappenregister").

International studies to improve the current treatment standards are performed at our center (BRAVO, Source XT).

Meanwhile, heart valve prostheses of the so-called "second generation" are used in increasing numbers, which enables a simpler and therefore safer implantation (Symetis Acurate) while leaving virtually no residual paravalvular leakages (direct flow) as compared to the types of valves used initially. The latter prosthesis could already be used in patients with a primary insufficiency (regurgitation) of the aortic valve in addition to its main use in setting of an narrowing (stenosis).

To check the safety and effectiveness of TAVI procedures, parameters such as quality of life, improvement of symptoms and valve function are also recorded and scientifically evaluated.

INHALT

Transaortic valve implantation in the cardiac catheterization laboratory

Clip-implantation in mitral regurgitation

Catheter - guided reconstruction of the mitral valve in patients with mitral regurgitation

The Department of Medicine 2 of the University Medical Center Mainz, is one of five "centers of excellence" in Germany for the catheter-based treatment of mitral valve regurgitation. The so-called Mitra-Clip® helps to seal a leaky mitral valve by adjusting the diseased parts of the leaflets together.

3-dimensional ultrasound imaging, which is a special expertise of our center, helped enormously to move this field forward. Under the supervision of Dr. von Bardeleben our department advanced to an "International Training Centre" with 3D echo-imaging workshops for interventional cardiologists.

As a result of this particular expertise, he was involved in the elaboration of the German Guidelines and the American FDA approval process. This innovative procedure has been carried out approximately 10,000 times world-wide, with Germany representing a share of about 60%.

For further knowledge acquisition and quality assurance, the results of the interventions are scientifically evaluated as part of the "German TRAMI register" and new study protocols (RESHAPE, Matterhorn).

Another new, valve-sparing method for the treatment of mitral valve disease is the mitral ring contour system Carillon®. It has been successfully used in our department by tightening the great cardiac vein and, thus, partially sealing the mitral ring.

More mini-invasive heart valve interventions

Thanks to new, safer and easier to use materials, balloon dilatations ("valvuloplasties") of the mitral and pulmonary valve have been performed in our Department of Medicine 2 with encouraging success.

Especially, patients with stenoses but less calcified heart valves benefit from these procedures. In rare cases, patients with surgical or TAVI prostheses may develop heart valve leakages over time. If these patients complain about symptoms (e.g. shortness of breath) such defects may be closed by means of a small wire mesh ("plug") introduced via a catheter to prevent re-operation. Such interventions have been carried out successfully in our department in cases of both aortic and mitral valve leakages.

■ **Secretary Office / Registration**
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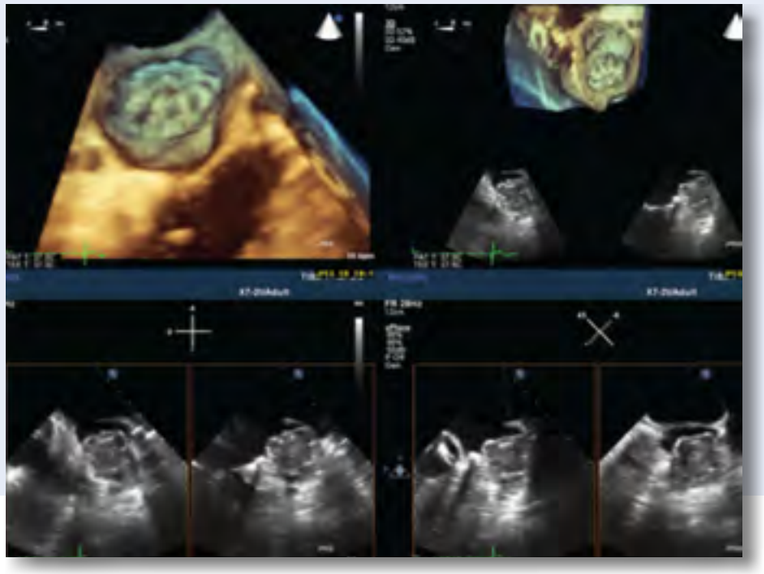
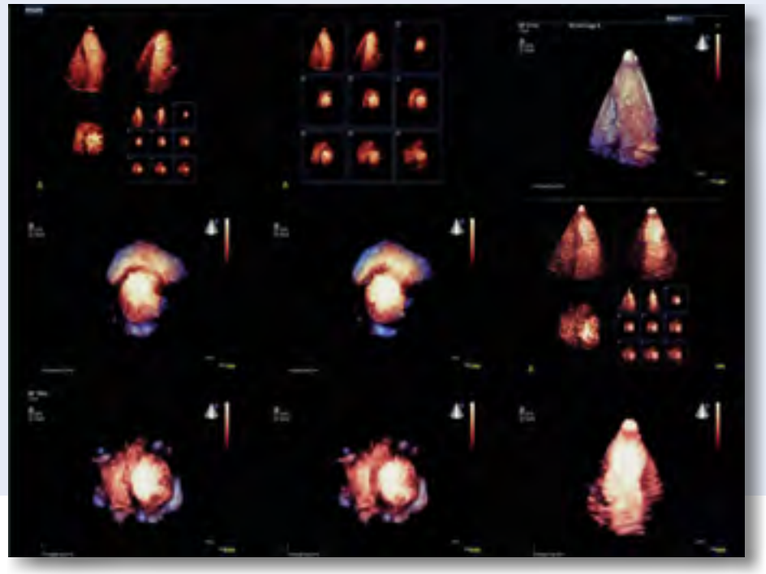
Echocardiography

The Team of the Echocardiography



Echocardiographic visualisation in 3D of an interventional implantation of a left atrial appendage occluder



3D-visualisation of a left ventricle in a contrast enhanced stressechocardiography (von Bardeleben, RS, et al DMW 2014)

Echocardiography

Author: S. von Bardeleben

Echocardiography in Mainz: from noninvasive diagnostic imaging to applied therapy guidance in the context of multi-modality imaging

The echolab of the Department of Medicine 2 has been successfully certified on a European level by the European Association of Cardiovascular Imaging (EACVI), a branch of the European Society of Cardiology (ESC), in the year 2010.

It has become one of the leading and largest echolabs in Germany, with a constant increase in the number of procedures by about 8 to 10% per year. This is due to the fact that a growing number of interventions are being assisted by cardiac ultrasound or are primarily driven by ultrasound.

Echocardiography addresses safety issues during catheter based therapy of atrial fibrillation and is involved in procedural planning, guidance and success evaluation in the department for interventional heart valve therapy including TAVR and MitraClip procedures.

There is an increasing importance of the three dimensional aspect of imaging of the heart chambers and heart valves. This information leads to a shortening of procedural times and a decrease in the radiation burden of both patients and interventional cardiologist.

A further aspect is that 3-dimensional images of echocardiography now are similar to the direct visualisation of a surgeon during open heart surgery.

The fusion of more than one imaging modality is also used during

- transcatheter interventions involving the mitral valve,
- the treatment of regurgitation using the MitraClip system,
- the ballon valvuloplasty of a stenotic mitral valve due to rheumatic heart disease,
- the closure of left atrial appendages using the Watchman Device
- to decrease the rate of strokes in patients with intolerance of warfarin or phenprocomon therapy,
- the closure of perivalvular leakages following a surgical heart valve replacement
- and the closure of septal defects.

During all these procedures, the interventional cardiologist can take advantage of the 3-dimensional imaging of heart valves, that cannot be seen directly using X-rays. The number of such complex procedures has increased by more than 50% during the last 12 months.

Members of our laboratory have held training courses in these new imaging modalities in 7 national and european meetings organized by the German Society of Cardiology, the German Society for Ultrasound in Medicine and the European educational institute CROSSROADS.

There were more than 200 physicians educated in Mainz by the head of the echolab, Dr. Stephan von Bardeleben.

At the present time, there are 6 rooms in the echolab and the number of procedures has reached almost 18000 a year.

Transoesophageal examinations with 3-D-TEE were more than 3,500 and stress echocardiographies were more than 2,400.

Intensive Care and Emergency Room

Nursing team of the emergency room

Arne Ulrich Klett
Senior consultant of the emergency room

Patrick de Paoli,
Nursing director of the emergency room

Emergency Room

Author: A. Klett

There is hardly a department in a tertiary medical center like ours which is under greater pressure than the emergency room.

The emergency department is in continuous operation 24 hours a day, 365 days a year. High turnover can be seen especially in the evening and during the weekend. The most common complaints are severe abdominal pain or anxiety: last year, the number of treated cases significantly increased by approx. 20%, and the numbers continue to rise.

Each critically ill patient is seen by our team immediately with highest competence according to internationally recognized guidelines. Every patient with acute heart failure and stroke is approached by a complete treatment team that makes decisions on investigations, medications and treatment techniques within minutes.

In order to reduce the time to diagnosis, various treatment algorithms were integrated into the processes of care. Modern point-of care diagnostic facilities like our new blood gas analyser help within a few minutes after the patient's arrival.

An important indicator for the quality of care is the time of the patient's arrival to the first contact with a medical professional. This "Time to Provider" time lies in our department constantly between immediate and 30 minutes, dependent on the severity of the emergency case. This has shown to increase patient safety significantly.

The emergency room is the first contact with the University Medical Center Mainz, often with the health system in general, and in some way the business card of the hospital, but also of the city and the region.

The emergency department is a high performance unit, facing around-the-clock the most complex and urgent medical problems, and it also needs to be prepared for major disasters. In the internal medicine emergency room there is a well-established, experienced and competent medical team.

An emergency unit like ours cannot however fulfil its tasks by itself. Perfectly embedded in the University Medical Center Mainz, we are supported by all Departments: the emergency room must rely on the knowledge of cardiologists, thoracic surgeons, gastroenterologists and urologists, and we communicate all day long with radiologists, neuroradiologists and laboratory analysts.

In 2013, there were numerous improvements to the complex tasks of the emergency team to match even better the difficult situations in an emergency room.

A new Unit within the Second Medical Department was established: the Unit of Internal Intensive Care and Emergency Medicine. Head of this department is Dr. med. Felix Post Clinical Manager of the Department of Medicine 2 and an experienced cardiologist and intensivist.

The procedures in emergency rooms and intensive care units were more closely linked for the benefit of critically ill emergency patients, the staff of both

departments are in constant exchange of experience and have training sessions together.

With Patrick de Paoli, a new nursing director of the emergency teams could be won. Under his leadership, a enthusiastic team of promising young employees was built, which includes 23 nurses with seven physicians, ready for emergencies of all kinds.

The establishment of a case management improves the holistic care of the patient and means optimizing the transition to primary care physicians and home care services. We are optimistic about the future. We constantly strive to offer our knowledge to patients, to improve emergency care and adapt to the latest medical research.

Senior Consultant Dr. med. Felix Post
Head of the Department of Intensive Care and Emergency Room

Intensive Care

Author: F. Post

Modern medicine in a tertiary care hospital places high demands on intensive care. These requirements continue to grow, and to cope with this challenge, an ongoing process of modernization in an ICU is required. This process of modernization includes all areas.

The intensive care Unit 2 A in building 605 has risen to this challenge and due to its performance it has acquired an outstanding position in Rhineland-Palatinate and beyond the state's borders. The wide range of treated patients include multidisciplinary care of critically ill patients from all internal, surgical and neurological areas.

A well-established network of partners from all departments, who are committed the same extent to their subject and to intensive care, is available. A unique feature of Mainz is the close cooperation with the National Poison Information Centre Mainz (Head Dr. Andreas Stürer). Its consultation rooms are located on the intensive care unit and jointly managed by the team of the ICU. Besides Mainz, this clinical integration of a poison control center into the clinic can only be found in Munich. Physicians of the ICU also act as poison consultant: patients with poisoning of any kind are cared for on a regular basis in this unit. Doctors can thus acquire the additional qualification "clinical toxicology".

Of course there is also the full training authority for "Internal Intensive Medicine". In recent years, several doctors have obtained this additional qualification, so there are several doctors with the additional qualification "Internal Intensive Medicine" working on this ward. Staff from our group has been employed in other centers as senior consultant positions and, in one case, as chief physician position. We consider this to be an acknowledgment of the quality of each and every day.

In addition, the team of the ward forms the medical emergency team (MET) for the medical clinics. To this end, all employees receive the ERC (European Resuscitation Council) certified ALS emergency training.

Several employees have already obtained a higher qualification and have become ERC instructors themselves. In turn, they regularly train national doctors, nurses and paramedics in emergency response.

Some employees also have the additional qualification emergency medicine. Meanwhile, the station has developed its own training program for emergency response for Mainz and regularly trains staff from other areas (cardiac catheterization laboratory, general wards, emergency room).

This close link led to many synergies with the conservative emergency room in the same building, so the Board of the University Medical Center Mainz has decided to install the Department of Conservative Intensive and Emergency Medicine, which should ensure a closer cooperation between the two areas. This department is headed by Dr. Felix Post in his capacity as head of department and the senior consultants, Dr. Joachim Kaes and Dr. Ingo Sagoschen (both ICU) and senior consultant Arne Klett (emergency room). In both areas, the number of treated patients was increased by 10% this year alone.

A wide range of instruments is available for the work on the ward. Any form of ventilation up to HFO-ventilation are complemented by Extracorporeal circulation support (ECMO and ECLS, "heart-lung machine"), which are operated as a pure lung replacement or even as a complete heart-lung replacement. No ward in the whole of Rhineland-Palatinate has applied more such procedures in recent years than the unit 605 2 A. Many intensive care units of other clinics send patients to Mainz because of its special expertise in respiratory medicine.

These methods are complemented by almost all modern extracorporeal elimination processes that modern intensive care has to offer the (hemodialysis, CVVH, CiCa, membrane plasma separation, hemoperfusion). All employees are trained in the use and indications of such systems. Several devices are available around the clock.

All of this quality would be worth nothing without nursing being on an equally high level. In particular, intensive care requires nurses having the constant desire for further education and this makes work even more interesting. Working in the ICU is characterized by team work of specialists of various disciplines and flat hierarchies. This is necessary to treat the critically ill patient holistically.

In addition to all high-tech medicine, however, a personal interview is sometimes more important than any other device.

Personal interviews for relatives can be arranged and are encouraged. Often, the treatment success is favorably influenced by involving relatives. Besides professionalism, we strive to offer a human face and a strong shoulder for all problems and fears to both patients and family members.

The intensive care unit is available 24 hours a day. We wish that both patients and relatives feel well taken care of during the difficult time of intensive therapy.

The team of the intensive ward

Center for Clinical Studies

Staff of the center for clinical studies

Center for Clinical Studies

Authors: T. Gori and I. Walther

Staff

- **Head**
  Prof. Dr. Tommaso Gori
- **Staff physician**
  Dr. med. Philipp Nikolai
- **Coordination**
  Ilka Walther
- **Study nurses**
  Gabriele Gebel
  Bärbel Kaesberger
  Keslin Schulz
  Hannelore Seiler
  Susanne Wüst

The Center of Clinical Studies

The last two decades have witnessed significant progresses in the treatment of cardiovascular diseases, and particularly in the treatment of heart attack and heart failure. This is mainly due to the development of new drugs and medical devices but also to the conduction of large clinical trials.

The patients who participate in these studies provide a major contribution to the progress of medicine.

For this reason, we would like to thank all patients who have participated in our studies and have visited our study centre throughout the last years.

For these patients, the advantage of participating in such studies is that they receive treatment with the most modern therapies and that they are treated in a controlled environment, with more frequent visits and exams conducted by a motivated and competent medical staff, certified and regularly re-trained.

The center for clinical studies of the Department of Medicine 2 cooperates with large international pharmaceutical companies and conducts studies from phase II to IV., and the cooperation with the clinical study centres of the Department of Oncology, Urology and Dermatology has also been expanded further.

The focus of our studies in the last years have been

- The treatment of heart attacks,
- coronary artery disease with comorbidities such as diabetes, high blood fat and atrial fibrillation,
- heart failure,
- coronary stenting.

Besides this, as in previous years, we also focused on studies including the measurement of endothelial function.

In all these fields, our study centers function as a service provider for industry-sponsored studies, but it also supports our own investigator-initiated trials, which make us one of the leading research centers in Germany and Europe.

Professor Tommaso Gori took over the responsibility for the clinical study center at the beginning of 2013. Dr. Philipp Nikolai, is our study physician, and Ilka Walther is responsible for the coordination of the studies, together the study nurses Gabriele Gebel, Bärbel Kaesberger, Keslin Schulz, Hannelore Seiler and Susanne Wüst.

In the years 2012/2013, our center was involved in the implementation of 24 clinical trials; 118 patients were enrolled, and a total of more than 200 patients were treated during the year 2013.

In order to continue clinical trials successfully, we constantly rely on the cooperation of our patients. Only this way can we contribute to medical advances and to the development of innovative substances for the future.

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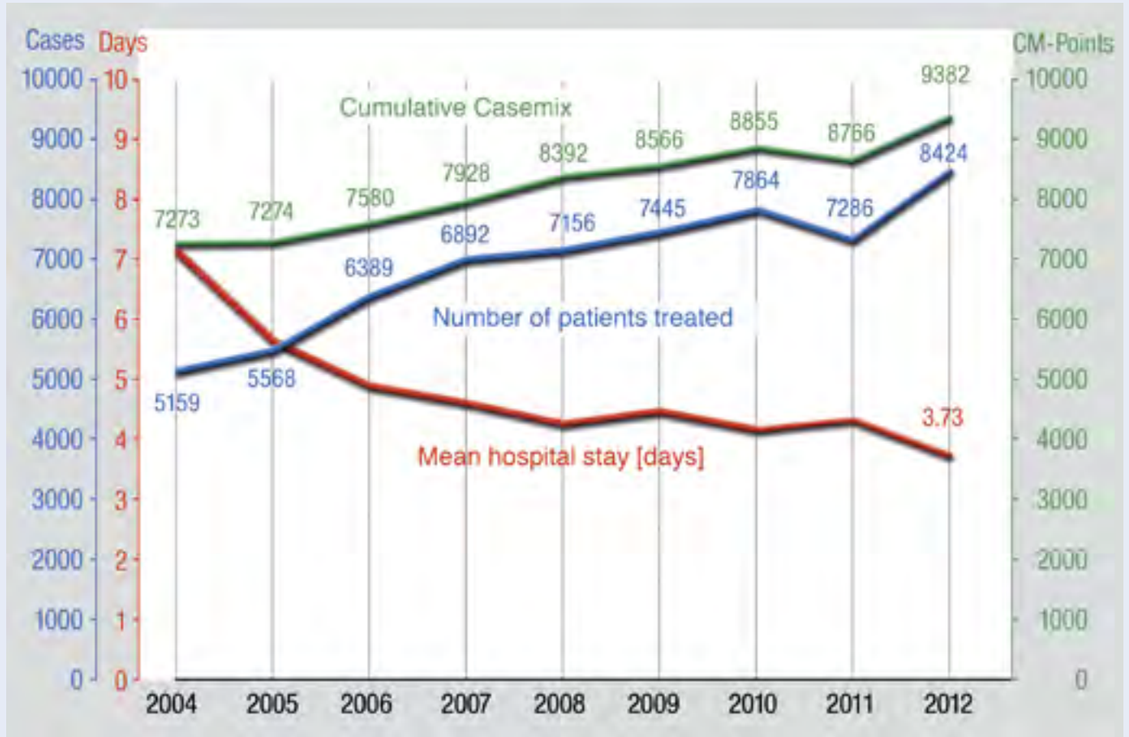
In 2012, the performance has continued to rise: whereas 7,286 in-patients were treated in the year 2011, 1,138 patients more were treated in 2012.

Accordingly, the case-mix (an index of the average severity of the cases treated) has risen to 9,382 points. Due to the high throughput of patient the mean hospital stay was reduced to 3.73 days per case.

For 2013, for the first time, there is a forecast of over 9,000 inpatients / year and a cumulative case-mix of over 10,000, which will be primarily due to the increased number of valve implantations.

Performance of the Department of Medicine 2



Performance development in the area of patient care in the Department of Medicine 2

Interview with a patient

Andrea Mänz-Grasmück interviews Mr Rainer Klee from Bad Kreuznach

Mr Klee, how did it come that you were admitted in our Department?
After appendectomy, I was diagnosed with atrial fibrillation. I was referred to Mainz from the Diakoniekrankenhaus in Bad Kreuznach for follow-up treatment.

What symptoms you have led you into the Department of Medicine?
Atrial fibrillation, which was found shortly before the aforementioned operation.

How did you feel when you arrived, how was the admission procedure?
The organization via your admission management was absolutely professional.

What were your expectations before your treatment?
A protracted painful treatment, which may eventually lead to success.

Have they been met?
Amazingly, everything was much less painful than expected! The intervention was conducted on Friday in the late afternoon following anesthesia (I could not be operated without anesthesia due to my high pulse); there was no pain or discomfort. Ultimately, I was successfully operated, well looked after, and I was released on Monday!

What would you like to highlight?
1. The examination before discharge with explanations of all possible facts about my heart by means of modern technology – I was thrilled by all this technologies!
2. The doctor's initial examination with detailed explanations about the forthcoming intervention.
3. The absolutely perfect instruction on the procedure just before surgery.
4. The care provided by the nurses.

What can be improved?
From today's perspective, nothing I could contribute!

This clinic like most hospitals suffers from cost pressure. Have you noticed anything in this sense and if so, what was it?
I have not noticed anything. I can just imagine that everything is expensive and doctors are under tremendous pressure. Time pressure and pressure to succeed, constant paperwork and training, promotion procedures, etc.

Thanks to the management of the University Medical Center in cooperation with those providing the money for the state-of-the art and sophisticated medical technology in all areas, it was good to experience it all!

I would also like to leave one quick message to all patients: Do what the doctors say, then you will feel well! Of course, take your time to think about what the doctors told you ask questions, this is always allowed and desired!

Research in the Department of Medicine 2

Gutenberg Health Study (GHS)

Press conference on August, 22nd 2013 in the UMCM: Further sponsorship of the Gutenberg Health Study by Boehringer Ingelheim GmbH
(from left to right: Univ.-Prof. Dr. U. Förstermann, Univ.-Prof. Dr. N. Pfeiffer, Univ.-Prof. Dr. P. Wild, Prof. Dr. K. Dugi, Univ.-Prof. Dr. T. Münzel)

Boehringer Ingelheim is going to support the Gutenberg Health Study for another four years.

Author: P. Wild

The next phase of this study is focused on extending the comprehensive GHS biobank.

Boehringer Ingelheim continues its financial support of the GHS by donating three million Euros until the end of 2017. This ensures the continuation of the project, which started in 2007, up to that year. A bio databank is currently being further developed. The aim is an earlier prediction of an individual risk for cardiovascular, metabolic and psychological diseases, cancer, eye diseases and diseases of the immune system, which can improve diagnostics and therapy. GHS is one of the largest interdisciplinary, population-based and representative studies worldwide.

The GHS is designed to analyze complex medical-biological interrelations. Population based data are registered and connected with a biobank: DNA, RNA, red blood cells, serum and plasma, urine, tear fluid, as well as periodontal pocket smear are integrated in one large bank of biomaterials. This biobank allows conclusions on the effect of genetic and molecular factors, which can cause diseases as much as life style and environmental factors or previous diseases.

Investigating these multifactorial influences on health is highly important because widespread diseases, including cardiovascular diseases, mostly have many different causes. In this context Professor Thomas Münzel points out that the GHS has been an important starting point for successfully applying for other large scale projects of the Federal Ministry of Education and Research (BMBF), the Center for Thrombosis and Hemostasis CTH and the German Center for Research in Cardiovascular Diseases.

For its in-depth characterization of individuals and its large sample size, the GHS is unique in Germany and Europe. Moreover it is a central part of the focus "Translational vascular biology".

The Head of the study Professor Philipp Wild, MSc emphasizes the fact that highly standardized examinations and data collection in the Gutenberg Health Study are crucial for the reliability of the scientific results. The GHS is an important source for research projects of scientists from many different disciplines.

The medical Director of the University Medical Center Mainz (UMCM), Professor Pfeiffer, designated the GHS a lighthouse project with scientific results that are unparalleled. Professor Förstermann, Scientific Director, thanked Boehringer and the study assistants. The GHS, he said, successfully contributed to the research obligations of the clinic within the UMCM.

From 2007 to 2012 more than 15,000 individuals in the age of 35 to 75 years from a representative population sample have been included in the study and examined in the study center. Follow-up examinations at 2.5 and 5 years after inclusion into the study have started. In the follow-up examinations, the participants' health status and their further medical history will be documented in the next years until 2017.

Boehringer Ingelheim is the most important industrial sponsor of the GHS. "Without any doubts we can expect groundbreaking results in the field of cardiovascular medicine from the results of the GHS in the future", emphasized Professor Dugi, Corporate Senior Vice President – Medicine of the Boehringer Ingelheim GmbH.

INHALT

Prominent Study Participant
(from left to right: Univ.-Prof. Dr. T. Münzel, Julia Klöckner and Univ.-Prof. Dr. P. Wild)

Political Prominence at the Gutenberg Health Study

Julia Klöckner takes part in the population based study at UMCM

Politicians are increasingly interested in the Gutenberg Health Study. This Project has a considerable significance in international research and in the region. On the invitation of Professor Münzel, Julia Klöckner, Deputy Chairwoman of the federal CDU and Chairwoman of her Party in Rhineland-Palatinate, has now participated in the study.

The examinations in this study, which almost take 6 hours, investigate cardiovascular diseases, metabolic, psychological and eye diseases, diseases of the immune system and cancer.

The aim of the study, which started in 2007, is to investigate the reasons for heart attacks and cardiac death in the population of the region of Mainz and Mainz-Bingen.

Scientists register data from the baseline examination, the development of the participant's health and the course of occurred diseases. In the current follow-up examination, the check-up is completed by inspections of the abdominal aorta, the leg veins and arteries and a test of planning and memory performance.

"I have never been examined in this great detail", Julia Klöckner is pleased about her visit at the GHS. She adds: "The precise adherence to the time schedule of the examinations and the friendliness of the study team are exceptional."

The deputy CDU chairwoman is strongly in favour of a further continuation of the study after 2017, when the current financing runs out: "Because of the great success of this project, I think it would be valuable to install the study for a longer time period. We politicians have to care for a contribution of the state Rhineland-Palatinate to medical progress, just like the Framingham Heart Study has done in the USA since 1948. Among others, the Framingham Heart Study revealed the negative effect of high blood pressure, cholesterol and smoking for people's health."

"It is inspiring that Ms Klöckner has arranged a visit in the study centre even on a Saturday", said Professor Münzel, who is one of the scientists who initialized the study.

"This Study has an immense significance for our region. We examined 15,000 people between 2007 and 2012 – before the new runway had been built at Frankfurt airport. This enables us to investigate the effects of an increased noise exposure caused by the increase of starting and landing planes and lowered flyways."

INHALT

CVSS

Project "Cardiac and vascular late sequelae in long-term survivors of childhood cancer" (CVSS)

This project investigates the connections between cancer at childhood and its long-term effects on the cardiovascular system.

Apart from an improvement of the prognosis, the aim of this project is to identify risk groups for adverse effects at an early stage and derive recommendations for preventive examinations.

This study is an interdisciplinary cooperation project of the Pediatric Hematology/ Oncology in the Centre for Child and Adolescent Medicine, the German Registry of Childhood Cancer and the Gutenberg-Health Study at the Department of Medicine 2 of UMCM.

About 2,000 individuals who were treated for cancer at childhood at the UMCM or other surrounding clinics between 1980 and 1990 are being invited to take part in this study. The 6 hours examination, focusing on cardiovascular diseases, is carried out in the study centre of the Gutenberg Health Centre at UMCM.

VTEval project

A new study will include patients with thrombosis and pulmonary embolism: the VTEval.

In the VTEval Project – Venous Thromboembolism Evaluation – the general conception was elaborated in 2012. The study design was determined and the study protocol was finalized. Both were submitted to the ethics committee and to the data protection officer. In addition to that, the variables manual, the ecrfs (electronic case report forms) and a special data base structure were developed in order to guarantee a standardized data collection in internal and also external collaborating clinics.

In December 2012 the pilot study started in the department of angiology (DVT cohort) in the Department of Medicine 2 of the UMCM.

Since March 2013, patients are included into the study in the department of angiology.

The implementation of VTEval in the emergency room, the chest pain unit and the intensive care unit is envisaged for the next weeks. The project will also be extended to external clinics in 2014.

DZHK Update

German Centre of Research in Cardiovascular Disease

Author: P. Wild

In their fight to create optimal research conditions in the field of combating widespread diseases, the federal Ministry of Education and Research has founded the German Centres for Health Research.

One of these centres is the National Centre of Cardiovascular Research (Deutsche Zentren für Herzkreislauf-Forschung, DZHK). It is constituted by 26 institutions which are arranged in 7 locations. The aim of this centre is improving prevention, diagnosis and therapy of cardiovascular diseases. Their main research emphasis is on disorders of the heart valves, inflammatory cardiovascular diseases, genetically determined cardiovascular diseases, heart failure, arrhythmia, prevention of cardiovascular diseases and cardiovascular imaging.

UMCM is part of the location Rhein-Main of the German Centre for Cardiovascular Research. Its focus is on clinical epidemiology of cardiovascular diseases.

The Myovasc Study

Within the German Centre for Cardiovascular Research, the location in Mainz is engaged in investigating cardiac disorders and their interdependences with vascular diseases. The MyoVasc study cohort subdivides in a cohort of individuals with asymptomatic cardiac dysfunction and a cohort of individuals with (symptomatic) heart failure. Different primary endpoints are defined for these two cohorts. Secondary endpoints are similar for both.

The primary aim of this study is investigating phenotypes of different asymptomatic functional cardiac disorders and identifying determinant that cause a progression of these functional disorders. Patients who meet the inclusion criteria and are willing to take part in the study are invited to the 5 hours baseline examination into the Myovasc Study center. The first examinations comprise a detailed inspection of the cardiovascular system (echocardiography in 2D and 3D), ultrasound examination of the carotid artery, measurement of the endothelial function, body plethysmography, spiro-ergometry, standardized blood pressure measurements, 12-led-ECG, anthropometric data, ankle-brachial index, augmentation index, venipuncture, long-term ECG, a long-term blood pressure measurement and a computer assisted personal interview.

One year after inclusion into the study, the first Follow-up examination (F1) is due. It is a computer assisted telephone interview (CATI) which is repeated three years after inclusion into the study (F3). Time demand and content of these two interviews are identical.

Two years after inclusion into the study, the participant is invited to another Follow-up examination (F2) in the study center. This one is similar to the baseline examination in terms of time demand and content of clinical examinations and it is repeated again another two years later (F4).

About 4000 participants are envisaged to be included in the study from January 2013 to January 2017.

Myovasc is an investigator initiated trial. It is financed by means of the BMBF (Federal Ministry of Education and Research) through the DZHK center RheinMain, location Mainz and by means of the Center of Vascular Prevention. The DZHK center RheinMain, location Mainz is represented by the spokesman of this location, Professor Thomas Münzel.

INTERVENT

Implementing a Database and Biobank of all patients in the Department of Medicine 2

The Intervent Project

Author: P. Wild

In cooperation with the Department of Medicine 2, another Study is performed in the framework of the DZHK – the Intervent Project.

INTERVENT includes all patients who receive an interventional therapy for their cardiovascular disorder.

Different cohorts compose this observational study which permits a holistic view on the individual disease and its course. The holistic approach leads to broader research findings since the majority of cardiovascular diseases have a multifactorial genesis.

Most patients are of older age and show several risk factors. They can suffer from various cardiovascular diseases and get different interventions. A common study ideally allows investigating the complete course of disease and intervention in these patients.

By means of the biobank different inflammation and hemostasis parameters as well as parameters from the immune system can be investigated. By means of the integrated study design these parameters can be observed, analyzed and compared in the different cohorts in an overviewing manner.

Depending on the received intervention the patients are assigned to the following cohorts:

- **Cohort 1**
  Percutaneous Aortic Valve Implantation (TAVI)
- **Cohort 2**
  Percutaneous Mitral Valve Repair System (MVR)
- **Cohort 3**
  Renal denervation (RDN)
- **Cohort 4**
  Percutaneous Closure of a Septal Defect (SDO)
- **Cohort 5**
  Percutaneous Closure of Left Atrial Appendage (LAA)
- **Cohort 6**
  Percutaneous Coronary Angiography (PCA) dual risk stratification.

For the time being this study is conceived for 10 years. 2,000 to 2,500 patients are intended to be included every year.

thrombEVAL

Study on Marcumar treatment of patients with atrial fibrillation: thrombEval

Author: P. Wild

The state Rhineland-Palatinate's key project "thrombEVAL" (Thrombosis Evaluation) within the initiative health economy, a study program was planned in the field of research on medical care. Its title is "Medical care for patients with oral anticoagulation therapy" and it is carried out by the Centre for Thrombosis and Hemostasis (CTH) at the UMCM, upported by the Federal Ministry of Education and Research.

Different care systems are investigated in observational studies in 4 subgroups. The aim of this project is to analyze scientific data on the quality and cost-effectiveness of the current German routine care in the field of oral coagulation therapy and comparing them with outcome data from a specialized hemostasis service, the "Thrombosedienst" which represents an innovative care design.

Additionally, a survey on satisfaction and experiences with medical care in oral coagulation therapy is carried out with patients in both care systems.

Doctors in the state Rhineland-Palatinate are also asked for their opinion on changes in care structures in the field of hemostasis. To ensure a scientific data acquisition and analysis, a study data base has been established for a standardized data collection.

In continuation of the key project "thrombEval", the recruiting of study participants could successfully be extended in the thrombEVAL1 study by expansion of the thrombEVAL network.

Cooperation with five other clinics and enlarging the service in the special hemostasis care made it possible to reach the envisaged number of cases in time.

All in all 2011 patients could be included into the thrombEVAL1 study and 760 patients into the thrombEVAL2 study.

The construction works for the CTH biobank could be completed. This facilitates the storage of biomaterial in order to investigate different scientific questions in the field of oral anticoagulation therapy in the future.

CTH Update

Center for Thrombosis and Hemostasis

Author: M. Gees

All professorships (4) and Junior Groups (4) of the CTH could finally be successfully attributed in 2012. With the acquisition of Professor Dr. Sven Danckwardt from Halle to the CTH and the start of the Junior Group of Dr. Mareike Lankeit, the CTH now has a scientifically and clinically well-established team that is ideally complemented by the Alexander von Humboldt Professorship of Professor Dr. Wolfram Ruf, who has taken up his position on 1.4.2013.

At the award ceremony of the Alexander von Humboldt Foundation in Berlin in May 2013, the Federal Minister of Education and Research, Professor Johanna Wanka, emphasized how important it is to be able to attract excellent scientists back to Germany. This success also add to the reputation of the CTH, and its positioning as a reference center nationally and internationally.

Professor Dr. Ruf will strengthen the translational aspects of our research. Key to this will be the establishment of a stronger link between basic research and patient care, especially in the area of advanced diagnostics. The aim is shorten the gap between innovations from research and application to the treatment of patients.

This concept also includes the promotion of structures for the conduct of clinical trials, an area where the CTH has a dedicated focus. With the establishment of a coordination unit for clinical trials, shared by the Department of Medicine 2 and the CTH, we have established the prerequisites necessary to conduct an already impressive amount of studies – such as large patient cohorts, data and biobanks as well as the GHS.

Under the direction of Professor Dr. Stavros Konstantinides (CTH), an internationally experienced task force will coordinate study projects.

Instrumental to this was also the recruitment of Mr Kurt Quitzau, who has gained a large experience in the coordination of many large study projects at the ETH in Zurich.

Together with the Study Centre of the Department of Medicine 2, we not only plan to increase the number of studies that are conducted at our site, but we also aim at establishing a quality management unit and at developing a center for the training of young scientists.

The profile and working group of Professor Dr. Philipp Wild, leader of the "Clinical Epidemiology" of the CTH, was also strongly reinforced in 2013. With a shared appointment between CTH and the Department of Medicine 2, Professor Wild will successfully establish in the coming years an independent area focused on preventive medicine, biobanks and databases. This project will further strengthen our clinical epidemiology, with a focus on both research as treatment.

Last, together with the Department of Medicine 2 and the center "Translational Vascular Biology" at the University Medical Center Mainz, the CTH recently succeeded in the summer of 2013 in recruiting Professor Dr. Katrin Schäfer, a well-known scientist, to Mainz.

The rapid progress of the CTH mirrors its success in the acquisition of third party funding for its projects. This also includes a large multi-center study funded by Bayer. All this shows that our concept of translational research with a clear connection to patient care really works.

This strategy is also complemented perfectly by the successful establishment of the clinical structures of the CTH.

In addition to the coagulation clinic, which was entirely transferred from the Department of Medicine 2 to the CTH, the CTH has now established itself as a partner in the care of patients with pulmonary embolism under the direction of Professor Dr. Stavros Konstantinides. The successful establishment of this joint service is a further evidence that the CTH concept bears fruits not only scientifically but also medically, which opens up new potential for research in patients.

For this, a close cooperation with the central facilities, and in particular the Department of Medicine 2, with its large cohorts of patients, plays a key role: it is only by directly applying its research concepts to clinical practice that the CTH may fully exploit its translational concept and implement innovations in patient care.

As in recent years, another young scientist from the Department of Medicine 2 deserved the inclusion in CTH´s prime educational program, the Virchow Fellowship. With his ambitious research and career program, Dr. Steven Sebastian will be supported for the next two years by the CTH for his studies.

The Alexander von Humboldt Professorship awarded to Professor Wolfram Ruf

from left to right:
Univ.-Prof. Dr. Georg Krausch,
President of the Johannes Gutenberg University,
Professor Johanna Wanka,
Minister for Education and Research,
Univ.-Prof. Dr. Wolfram Ruf

Professor Dr. Helmut Schinzel

Dr. Sebastian Steven

CTVB

Center for Translational Vascular Biology

Author: Th. Münzel

Despite a slight decline in the last years, cardiovascular diseases such as heart attack, stroke, atherosclerosis and thrombosis are still the number one killer in Europe with almost 50 % of all deaths. It is expected that the incidence of these diseases will further increase, as the incidence of risk factors such as obesity or diabetes progressively increases.

In particular, there is still great room for improvement in the prevention and treatment of these diseases. Like in other areas, a major shortcoming in this field is the lack of translational research transferring basic into clinical research, which results in a lack of new therapeutic approaches and effective preventive measures.

The goal of the "Center for Translational Vascular Biology" (CTVB) at the Johannes Gutenberg University is exactly to address this shortcoming. Since 2007, researchers from various medical facilities work within the umbrella of the CTVB in an interdisciplinary way.

With the graduate school "Transmed", the CTVB also offers an excellent platform for the training of young scientists.

One of the biggest projects of the CTVB is the Gutenberg Health Study, a prospective cohort study started in 2007 in which some 15,000 volunteers were studied already in 2012. In the next years, data on the incidence of cardiovascular disease, heart rhythm diseases, such as atrial fibrillation, tumors or depression will be collected. The aim of this large study is to predict the risk of disease of each individual and to develop individual approaches for the prevention and diagnosis.

Contacts to the CTVB

Professor Dr. Thomas Münzel
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http://www.unimedizin-mainz.de/vaskulaere-praevention/

A new member of the Department of Medicine 2 and the Center for Translational Vascular Biology

Prof. Dr. Katrin Schäfer
W2-Professorship for Translational Vascular Biology

New
in the Department of Medicine 2

Professor Dr. Schäfer, what will be the main focus of your work as head of the Working Group "Translational Vascular Biology"?
In the past, my working group has been focusing on the mechanisms and actions of cardiovascular risk factors and in particular how proinflammatory or prothrombotic cytokines from the adipose tissue act on vascular cells and modulate vascular wound healing processes, such as thrombosis and atherosclerosis.

In Mainz, I plan to continue and further intensify my research on these topics. For example, we will differentiate systemic from local effects and examine the differences in signaling pathways between vascular cell types. Another priority of my work group will be the reciprocal interaction between endothelial cells and cells of the circulating blood, such as immune cells and thrombocytes, and how their cross-talk is altered in response to cardiovascular risk factors. Besides adiposity, we also plan to study the molecular mechanisms underlying the effects of ageing on the vascular system.

You are a physician and conduct "translational" research. When do you expect implementation of your research results into clinical practice?
For me as a medical doctor primarily working in basic cardiovascular science, the patient and a specific clinical problem have always been the center of my research interests.

The goal of my work group is to study and to better understand the molecular mechanisms underlying cardiovascular pathologies, using specific disease models, genetically modified animals or cultivated cells. We hope that these studies will contribute to identify potential therapeutic targets and thus ultimately improve patient care. For this purpose, some of our findings will be confirmed in material obtained from human subjects or patients. For me and my group, translation means the reciprocal interaction between basic and clinical science, between bench and bedside.

We always hope to find novel diagnostic markers or to identify new therapeutic strategies, however, many little steps and the help of many dedicated people are necessary to reach this goal. Maybe we will succeed.

Which is the attraction of this work, of this project?
I very much like that my work is never routine, that scientific projects often do not run as initially expected, but produce new challenges. In most cases, our projects result in interesting findings, but also generate more questions than answers, which keeps me and my group busy.

I also enjoy working in a team and the joined effort to solve a problem or a scientific question. Also, I get in contact with many students and young researchers and hope to inspire them to be interested in cardiovascular science.

Do you like Mainz, the University Medical Center, as a workplace?
It is only a few months since I have been working in Mainz, but I like my new environment already very much. I have met many friendly and open-minded people and colleagues interested in my work.

With regard to the scientific environment, the University Medical Center Mainz is an ideal location for my research group, given the existing strong expertise in endothelial (dys-)function at the Department of Cardiology and Angiology. Moreover, the Center of Thrombosis & Hemostasis provides excellent possibilities to cooperate in studies on the interaction between the vascular wall, platelets and the coagulation system.

With Mainz being an important partner in the German Center for Heart and Cardiovascular Research (Deutsches Zentrum für Herz- und Kreislaufforschung, DZHK), there also are many new avenues of future research and collaborations.

As a city, I have never visited Mainz before, but already feel very much at home. I particularly like its location at the river Rhine, the nearby vineyards as well as the mild climate.

European Heart Journal Advance Access published July 7, 2013

FASTTRACK CLINICAL RESEARCH

Effect of nighttime aircraft noise exposure on endothelial function and stress hormone release in healthy adults

Frank P. Schmidt[1], Mathias Basner[2], Gunnar Kröger[1], Stefanie Weck[1], Boris Schnorbus[1], Axel Muttray[3], Murat Sariyar[4], Harald Binder[4], Tommaso Gori[1], Ascan Warnholtz[1], and Thomas Münzel[1]*

The study was conducted by the Department of Medicine 2, with the support of the Foundation Heart of Mainz and the Robert Müller Foundation

Aircraft noise above Mainz

Study results from Mainz demonstrate deterioration of vascular function due to aircraft noise

Authors: F. Schmidt and Th. Münzel

Aircraft noise has been associated in epidemiological studies with an increased risk of developing hypertension and myocardial infarction. Being located in the vicinity of Frankfurt airport, the cardiologists of Mainz University have a great interest in this topic.

With the publication of their study results in the European Heart Journal, researchers of the Department of Medicine 2 were able to show that nighttime aircraft noise is able to cause vascular dysfunction. The scientists lead by Professor Thomas Münzel exposed healthy volunteers to different patterns of nocturnal aircraft noise in a random sequence and measured cardiac and vascular function throughout. Study participants were young and healthy with a low risk for cardiovascular events.

Results showed a dose-dependent reduction in vascular dilatation capacity in relation to the number of aircraft noise events. This dysfunction of blood vessels can, in the long-term, cause diseases like high blood pressure, myocardial infarction and stroke. Therefore, earlier data suggesting that aircraft noise is not only a nuisance but also a health risk were substantiated by this study. Furthermore study results did not indicate a strict relationship between personal annoyance due to noise and subsequent vascular changes that were also found in some participants who did not report to be annoyed: in other words, aircraft noise damages the blood vessels even when the person is not annoyed – or does not notice – the airplanes.

The study did also demonstrate a statistically significant increase in adrenaline levels following noise exposure as compared to control nights. Adrenaline also raises blood pressure and a permanent increase can cause harm to the circulatory system.

In addition, signs of a higher vascular stiffness due to noise were found.

These effects taken together point strongly towards the potential risks of nighttime aircraft for cardiovascular health. Interestingly, no signs of habituation were seen, on the contrary statistical analysis found hints for a priming-effect, meaning an increased reaction to noise if the study participant had been exposed to noise in a prior night.

Another notable finding was the fact, that in a sub study, vitamin C was partially able to ameliorate the effects of noise on the vessel. This could be interpreted as a sign that reactive oxygen species play a role in noise-induced damage to the vessel wall.

The results obtained help to reduce important gaps in scientific knowledge with regard to noise research and scientists. We hope to contribute to the prevention of aircraft noise induced diseases. Vascular function measurement in the form of Flow-Mediated -Dilatation (FMD) seems to be a well-suited tool for future studies dealing with consequences of noise on the cardiovascular system.

However, one study is of course not enough to understand all underlying mechanisms and new studies dealing more specifically with the effects on patients and persons at risk have already begun.

Building on earlier results, new questions are being formulated to guide the design of future projects. Effects of aircraft noise on cardiac rhythm, the immune system and metabolic pathways haven't been addressed sufficiently. Therefore, there is still a great research need and department of cardiology will be strongly involved in this topic in the future as well.

Press conference on the occasion of the publication of the FLIGHT study on 2nd July 2013

On the podium of the press conference (from left to right):

Univ.-Prof. Dr. Thomas Münzel,

Dr. Frank Schmidt,

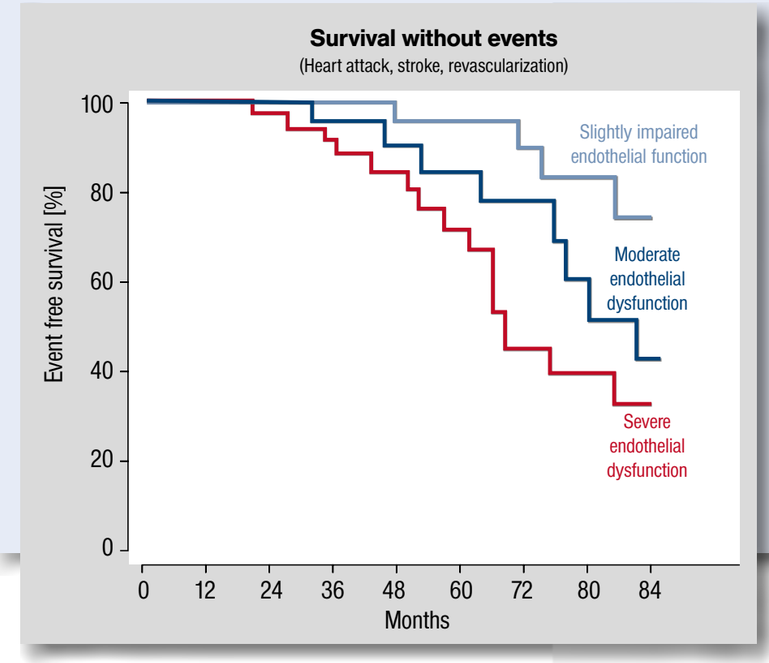
Univ.-Prof. Dr. Norbert Pfeiffer (Medical Director of the University Medical Center Mainz)

...

Kathrin Anklam-Trapp (member of state parliament, responsible for the social and health affairs of the SPD, Rhineland-Palatinate),

Dr. Dr. med. Rahim Schmidt (member of state parliament, speaker for health and research of the Greens, Rhineland-Palatinate),

Gerd Schreiner (member of state parliament, responsible for internal and financial affairs of the CDU, Rhineland-Palatinate)



An impairment in endothelial function carries a significant increase in the risk of developing heart attacks.

What is the importance of the observation that simulated Aircraft noise causes endothelial dysfunction?

— In the investigation of Dr. Schmidt, we decided to use endothelial dysfunction as a marker for vascular damage. Endothelial function is one of the most important focuses of interest in our Clinic and it has been successfully measured in more than 20,000 participants in the Gutenberg Health study. Endothelial function is a recognized method to assess early vascular damage.

Previous studies have shown that in patients who have hypertension and endothelial dysfunction, the incidence of cardiac events such as myocardial infarction and stroke can be expected to be higher.

Thus, endothelial function has a prognostic significance as shown in the picture above from the article of Perticone et al. (Circulation 2001 , 104:191).

This working group showed that patients with impaired endothelial function have a higher cardiovascular risk during a 84-months follow up. Another important observation was published by Heitzer et al: in this paper, we showed that patients with a heart attack have a worse prognosis if they have endothelial dysfunction, and that this is mediated by oxygen free radicals (figure above).

There are several important points regarding our FLIGHT study that deserve being emphasized:

- for the design , the interpretation of the results and the preparation of the publication we cooperated with important experts in the field such as Professor Mathias Basner (Philadelphia, USA, formerly German Institute for air and space research). This is an important quality criterion, because it shows that we addressed this issue very carefully.

- The detection of vascular damage was performed in young healthy volunteers with a mean age of 26 years, and aircraft noise was simulated by playing mp3 files including 60 flights distributed over 8 hours during the night.

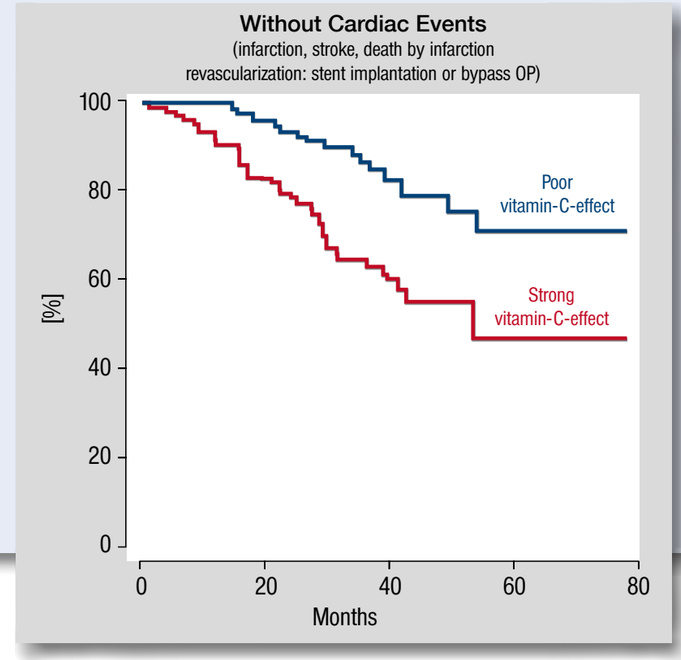
- We showed a "priming" effect, that is, the exposure to records containing 30 flights per night actually amplified the effect of the 60-flights records on endothelial function. In other words, noise had a more negative effect when subjects had already been exposed to noise.

- Endothelial function improved after administration of vitamin C, an antioxidant: this shows that the effect of noise on endothelial function is mediated by oxidative stress. This shows a, striking similarity with diabetes mellitus, high cholesterol and acute and chronic smoking.

All together, our data show that noise is a risk factor for cardiovascular disease like diabetes, smoking or high cholesterol.

The only difference is that one can get rid, or at least treat, diabetes, smoking or high cholesterol, while we cannot do anything about noise!

In other words, noise is the only cardiovascular risk factor that needs to be addressed by the politicians, rather than the patients themselves.



The administration of vitamin C allows studying the mechanism of endothelial dysfunction: a stronger effect of vitamin C, which demonstrates oxidative stress, also correlates with a worse prognosis.

The flight noise station was installed on 22.1.2013 by Univ.-Prof. Dr. T. Münzel, Katrin Eder of the Mainz Environment Authority, Ulrike Höfken, Environment Minister of Rhineland-Palatinate and by Univ.-Prof. Dr. N. Pfeiffer, Physician in Chief oft he Mainz University Medical Center

Aircraft noise measuring station on the roof of Building 102 of the University Medical Center

On-site Aircraft Noise Monitoring Station delivers first results

The State Office for Environment of Rhineland-Palatinate and the University Medical Center Mainz presented the first data.

The aircraft noise pollution over the University Medical Center of Mainz and the adjacent terrain is very high – during daytime and at night. Maximum values of 76 dB (A) have been measured.

According to the "WHO Night Noise Guidelines for Europe", harmful health effects are measurable at average sound levels above 40 dB (A) at night.

Since February 2013, the aircraft noise monitoring station, established by the State office, is recording data. The results for February, March and April 2013 show an average of around 4,300 aircraft noise events per month. The maximum peak value was 76,5 db(A), measured on 27th April 2013 between 5 and 6 in the morning. The maximum level of overflights ranged between 60 and 65 dB (A).

These high values were recorded mainly in the "border zones" (5 – 6 am and 22 – 23 pm) and in the afternoon between 15 to 17h.

Particularly high maximum levels were frequently registered between 5 and 8 am. Differences between the measured values were also induced by the various wind directions and flight paths. The day levels showed a differential spectrum of 34 – 53 dB (A) during west wind and 45 to 54 dB (A)during east wind. The average levels of the individual nights were between 19 and 46 dB (A) during west wind and 37 – 45 dB(A) during east wind.

The World Health Organization (WHO) recommends in their "Community Noise Guidelines for hospitals" an average sound level during the day and in the evening hours of 30 dB (A) in the interior and 45 dB (A) in the outside.

"In fact, we recognize that the WHO recommendations are exceeded in many days.

After the measuring stations in Weisenau and Laubenheim, this location is the third most polluted station in Rhineland-Palatinate," says Dr.-Ing. Stefan Hill, President of the State Office for Environment.

He also points out that the number of flight movements were in March 2013 at 5,026 events. On days with flight operating directions from east, this means flyovers every two to three minutes.

- In their guidelines, the WHO recommends an average noise level of 40 dB (A) during the night time on the outside to protect the public, especially children, the chronically ill and the elderly.
- The average aircraft noise level of 40 dB (A) was exceeded during the 8 hours of the nighttime (22 – 6h)
  - in February on 13 days
  - in March on 17 days and
  - in April on 12 days.

Professor Thomas Münzel commented: "We have to assume that patients who suffer from cardiovascular disease or persons who have already suffered a heart attack and stroke, are endangered by the high noise levels. I am particular concerned about the high noise level during the hours of 22 – 23 pm and 5 to 6 am – in these periods, heart attacks and strokes typically cumulate. Our patients need to have a quiet environment especially during these hours to recover from their severe illnesses and don't need additional noise stress induced by airplanes. I am still shocked by the implementation of the new runaway at Frankfurt Airport, just 20 km away from our clinic. We have severely sick people as patients, and now they have to fight in addition with airplane noise – this is scandalous."

The medical vice director of the University Medical Center Mainz, Prof. Dr. Karl Lackner, also comments on the data: "The clinic is primarily committed to the welfare of their patients. There is evidence that noise pollution is harmful for the recovery of patients' of all ages. For this reason we urge for a significant relief of noise pollution. Regarding the alarming measuring data, we claim that all opportunities for noise reduction have to be implemented immediately, especially during noise sensitive times of the day."

Measurement of aircraft noise on the roof of building 102 of the University Medical Center

Press conference on 15.08.2013: Univ.-Prof. Dr. T. Münzel describes the results of the measurements

In discussion: Dr.-Ing. Stefan Hill, President oft the state office for the Environment, Rhineland-Palatinate and Karin Eder of the Mainz Environment Authority

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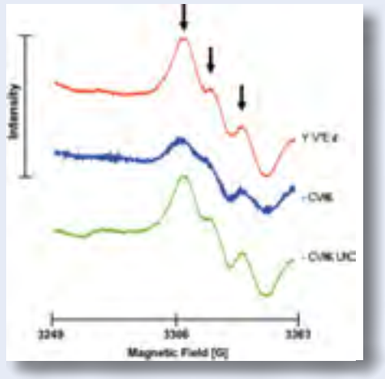
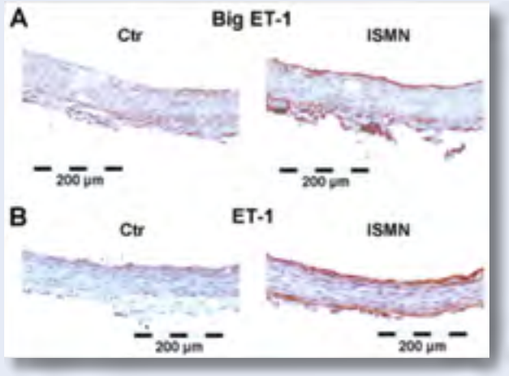


Left: Normalization of nitric oxide formation in aorta from hypertensive mice (ATII) by inhibition of mtROS-induced eNOS uncoupling (ATII+SfA). Measured by electron spin resonance spectroscopy. From Kröller-Schön, Steven et al., Antioxid. Redox Signal. 2013.

Right: Immunohistochemical detection of the endothelin-1 expression in aorta with and without ISMN treatment. From Oelze, Knorr et al., Eur. Heart J. 2012



Molecular Cardiology

Molecular Cardiology

Author: A. Daiber

The research focus of the Molecular Cardiology group is settled in the preclinical area and is mainly based on the characterization of the molecular mechanisms that contribute to vascular damage.

Another important research topic is the modulation of vascular damage by drug therapy – this is documented by numerous experimental in vivo studies that were conducted in our laboratory in 2012/2013 with financial support by and in collaboration with well-known pharmaceutical companies such as Boehringer Ingelheim or Bayer AG. In the subsequent paragraph we will present the most important scientific publications of our cardiovascular research during the last two years and we will provide an outlook on ongoing research projects in our laboratory.

Interaction of different sources of oxidative stress and its role for hypertension and the aging process

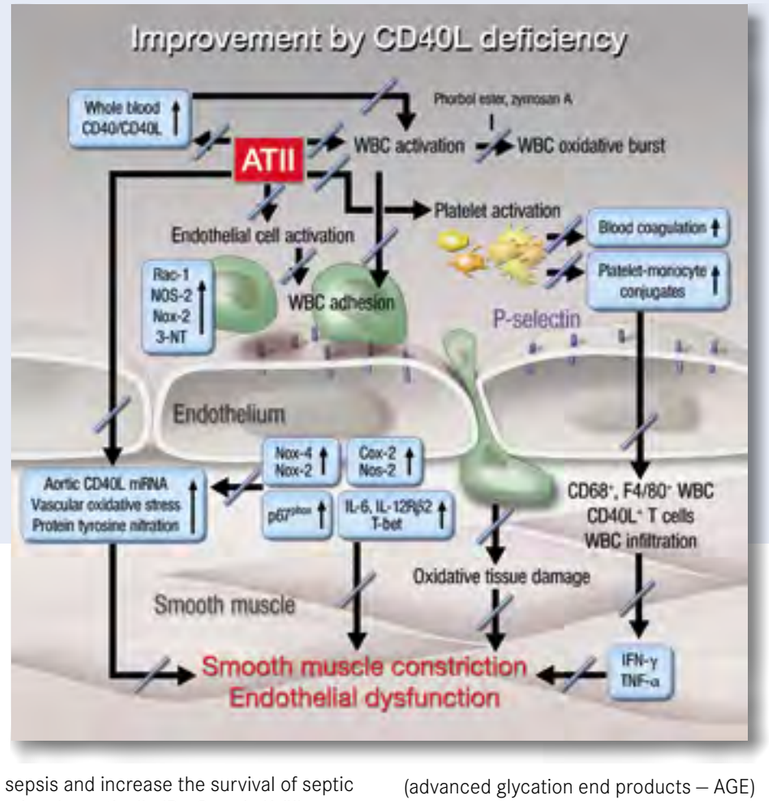
Dr. Swenja Kröller-Schön and Dr. Sebastian Steven could show in a recently published article that vascular damage during the aging process, characterized by endothelial dysfunction, is mediated by an interaction of reactive oxygen species generated by mitochondria and NADPH oxidases (Antioxid. Redox Signal. 2013). This interaction is based on a redox regulation consisting of an activation of NADPH oxidases by mitochondrial reactive oxygen species (mtROS).

Also of great importance was the observation that arterial hypertension in response to angiotensin-II infusion and the associated damage of vascular tissue was amplified by increased formation of mtROS in manganese-superoxide dismutase knockout mice. In contrast, the inhibition of the release of mtROS by genetic (cyclophilin D knockout mice) or pharmacological (sanglifehrin A therapy) blockade of a mitochondrial channel (mPTP) reduced arterial hypertension and vascular damage significantly.

The mtROS-induced activation of NADPH oxidases leads to an inhibition of the endothelial nitric oxide synthase (eNOS) by redox regulated modifications of the enzyme (S-glutathionylation and phosphorylations). The interaction of mtROS with the phagocytic isoform of NADPH oxidase, Nox2 which is mainly present in immune cells, suggests a contribution of this mechanism to the activation of granulocytes and monocytes. The details of this interaction between mitochondria and NADPH oxidases as well as the resulting endothelial dysfunction were also discussed within a previously published review article (Schulz et al., Antioxid. Redox Signal. 2012).

Dr. Matthias Oelze and Dr. Maike Knorr described a similar interaction between NADPH oxidases and the endogenous vasoconstrictor endothelin-1 under isosorbide-5-mononitrate (ISMN) therapy leading to increases in their activity and expression level as well as activation of immune cells (Eur. Heart J. 2012).

In a recently published article, Dr. Matthias Oelze and Dr. Swenja Kröller-Schön have also shown the role of this interaction in an experimental aging model with reduced



Role of immune cells for vascular damage in the setting of arterial hypertension (high ATII levels) and normalization of all these negative effects by genetic deletion of CD40 ligand (CD40L). From Hausding et al., Basic Res. Cardiol. 2013.

hydrogen peroxide degradation (glutathione peroxidase-1 knockout mice) and have demonstrated a phenotype of low grade inflammation in aged glutathione peroxidase-1 knockout mice with increased hydrogen peroxide levels (Hypertension 2013).

Role of immune cells for vascular damage and thrombosis and its pharmacological modulation

In 2011, PD Dr. Philip Wenzel and Dr. Maike Knorr could demonstrate in collaboration with Professor Dr. Ari Waismann that inflammatory cells (e.g. monocytes) play an essential role for the development of hypertension as well as endothelial dysfunction providing new therapeutic targets (Circulation 2011). Based on these initial results, our laboratory could identify and characterize potent anti-inflammatory and vascular protective properties of new anti-diabetic drugs such as gliptins (DPP-4 inhibitors) or glucagon-like peptide analogues (GLP-1 derivatives), which suppress vascular dysfunction in experimental sepsis and increase the survival of septic mice dramatically (Dr. Swenja Kröller-Schön, Dr. Maike Knorr, Dr. Michael Hausding et al., Cardiovasc. Res. 2012).

In addition, we investigated the role of the important signaling molecule of the immune system and atherosclerosis / thrombosis, CD40L, for development of arterial hypertension (Dr. Michael Hausding et al., Basic Res. Cardiol. 2013). The already mentioned activation of immune cells by mitochondrial reactive oxygen species (mtROS, see preceding paragraph) could represent an important player in the interaction of the immune system and vascular function – especially since this kind of cross-talk is triggered by ATII infusion.

In an almost completed study, Dr. Matthias Oelze and Dr. Swenja Kröller-Schön could demonstrate that the strict control of blood glucose levels and the normalization of hyperglycemia in a type 1 diabetes mellitus model by a new class of anti-diabetic drug (SGLT2-inhibitors) lead to a reduced signaling by toxic sugar products (advanced glycation end products – AGE) as well as normalization of the pro-inflammatory phenotype and finally improvement of vascular function in-diabetic animals.

It is important to note that the anti-diabetic principle of these new SGLT2i compounds is simply based on the increased renal excretion of glucose from the circulation, thereby improving hyperglycemia. Another research group in our laboratory (Dr. Swenja Kröller-Schön, Dr. Thomas Jansen and Dr. Eberhard Schulz) investigates the biological function and role of the AMP-activated protein kinase (AMPK), a key enzyme of cellular energy metabolism, cellular senescence and probably the regulation of the immune system, which may have beneficial effects on the development and progression of vascular calcification and dysfunction (Kröller-Schön, Jansen et al., Arterioscler. Thromb. Vasc. Biol. 2013; Kröller-Schön, Jansen et al., Arterioscler. Thromb. Vasc. Biol. 2012).

DFG Deutsche Forschungsgemeinschaft

Funding of research projects

German Research Foundation (Deutsche Forschungsgemeinschaft · DFG)

Research projects funded by the German Research Foundation

Authors: P. Wenzel and E. Schulz

In two research projects funded by the DFG (DFG WE 4361/3-1, WE 4361/4-1), scientists in the group of PD Dr. med. Philip Wenzel investigate the important role of immune cells for vascular Inflammation, oxidative stress and high blood pressure

The group of PD Dr. Philip Wenzel focuses mainly on monocytes, a specific subgroup of immune cells that promote inflammation. The researchers were able to show, that in animal models of arterial hypertension those cells are not only bystanders of high blood pressure, but are responsible for disease development. When these cells were deleted, no high blood pressure occurred – and when these cells were retransferred, hypertension could be reestablished.

In a second approach, the group could demonstrate that another kind of immune cells – the so called "natural killer cells" are essentially involved in the development of hypertension and the inflammatory process in the vasculature 1, 2.

Interestingly, this action relies on the crosstalk of natural killer cells with monocytes via Interferon gamma and Interleukin 12. Those "signal transducers" are called cytokines, and their effects are mainly appreciated today in Immunology and in chronic inflammatory diseases like rheumatoid arthritis and Lupus.

"Our work indicates that also high blood pressure is sort of a chronic inflammatory disease of the vasculature", PD Dr. Wenzel says. "Possibly there will be new therapeutic options to treat arterial hypertension." Sabine Kossmann, who completes her PhD thesis in the group of Philip Wenzel, was awarded for her achievements in this project in the "Young Investigator Award for Women 2013" at the annual meeting of the Atherosclerosis, Thrombosis and Vascular Biology society.

Ms Dr. Swenja Kröller-Schön of the working group of PD Dr. Eberhard Schulz was granted in 2012 of an amount of 206,400 Euro as project funding by the Deutsche Forschungsgemeinschaft (KR 4011/2-1)

The project is based on the papers 3 – 5 already been published by this group, and its purpose is the pursuit of research of the connection between free radicals and cardiovascular diseases. In particular, it will be investigated in which way the molecule PGC-1alpha, which controls the energy consumption of each cell, also influences the vascular function.

This context appears appropriate due to the fact that in the case of decreasing energy resources, nutrients have to reach the cells increasingly through the blood.

Therefore, a sufficient dilation of the blood vessels is necessary.

The medical interrelationships which control these regulations have been insufficiently studied yet. The results of this basic research seek to contribute to an earlier identification of vascular diseases and to improve prevention of related diseases such as myocardial infarction.

Sabine Kossmann, M.sc.

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At the central laboratory facility, Prof. Dr. med. Lackner and PD Dr. med. Wenzel (senior consultant in the CPU) take a closer look on the new machinery to measure the troponin I.

Translational Medicine in the Department of Medicine 2 — Troponin Test in Acute Coronary Syndrome Patients – Results from clinical science were successfully translated into patient care

Author: P. Wenzel

Since may 2013, we are finally there: The high sensitive troponin I assay was introduced into clinical routine and patient care at the University Medical Center Mainz. The results reporting on the predictive value of this assay for patients who were admitted to the hospital with chest pain, had been published by scientist from our clinic in 2009 and 2011 in the outstanding medical journals "New England Journal of Medicine" and "Journal of the American Medical Association".

Back then, scientists from the Department of Medicine 2 (Principal Investigators: Professor Münzel and Professor Blankenberg) found that myocardial infarction could be proven or ruled out twice as fast with the help of the new assay. Those results were regarded as breakthroughs by the professional medical societies, and guidelines for the treatment of patients with acute coronary syndromes were adapted because of these findings.

"With the new test, we are now able to tell patients who are admitted to our emergency room with chest pain if they suffer from myocardial infarction or not – within 4 hours of admission and with a certainty of almost 100%", Professor Münzel explains. To introduce the new test into the clinic, adjustments had to be made in the central laboratory. "We found a reliable industrial partner, Abbott Diagnostic, to introduce the new assay" says Professor Lackner, Director of the Institute of Laboratory Medicine. "The change in the technology was seamless".

Our Chest Pain Unit is a valued institution for our colleagues, emergency physicians and paramedics, and a favourite for our patients with chest pain.

"The new troponin I assay helps us a lot to manage the CPU and to keep patients monitored as long as necessary, but no longer", Professor Münzel explains. "If myocardial infarction is ruled out, our patients can leave the emergency room quickly, and they can be further treated by their general practitioners or cardiologists. This increases satisfaction of the patients enormously."

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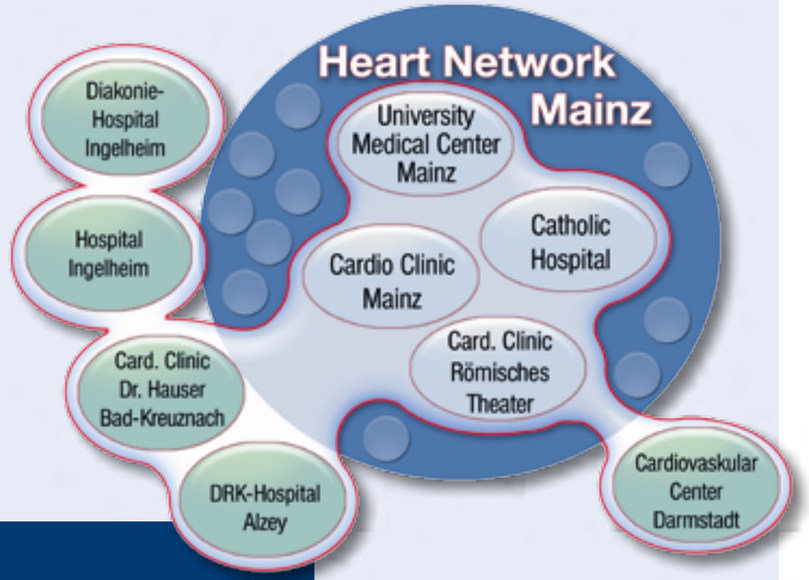

Heart Network Mainz

Cooperations

Heart Network Mainz
The network gets larger

"Together for the best patient care". The AGAPLESION-DIAKONIE HOSPITAL INGELHEIM and the University Medical Center Mainz signed a cooperation agreement to improve the care of patients with complex cardiovascular disease.

Both clinics agree on the future strategies of the treatment of cardiovascular patients. The initial treatment of patients will be performed in the Diakoniekrankenhaus Ingelheim; when necessary, for example in the case of patients who have an acute heart attack and need invasive interventions, patients will be transferred to the Department of Medicine 2, to be then transferred back to Ingelheim once these therapies have been given.

The cooperation is not limited to emergency cases. Patients from Ingelheim and the surrounding area will now have access to high-quality medical care in our cardiac catheterization laboratory, including investigations and interventions in coronary heart disease and rhythm diseases of the heart. Furthermore, access to our Intensive Care Unit is also provided.

A new cooperation between the Heart Network Mainz an the Agaplesion Diakoniekrankenhaus Ingelheim starts. The signing took place in Ingelheim on the 20.11.2013.

From left to right :
Prof. Dr. med. Thomas Münzel (Director of the Department of Medicine 2 of the University Medical Center Mainz), Gerhard Hallenberger (Member of the Board of AGAPLESION gAG),
York Ohlendorf (Managing Director of AGAPLESION DIAKONIE HOSPITAL INGELHEIM),
Dr. med. Wolfgang Mönch (Medical Director of AGAPLESION DIAKONIE HOSPITAL INGELHEIM).

Staff

Part 2

MD degrees 2012/2013

Name	Mark	Committee	Title
Coldewey, Meike	magna cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber	The heme oxygenase-1 as a new key enzyme in the development of nitrate tolerance during therapy with organic nitrates
Czyz, Ewa Izabela	magna cum laude	Univ.-Prof. Dr. Stefan Blankenberg Univ.-Prof. Dr. Christine Espinola-Klein	The role of heart-type fatty acid binding protein in early detection and prediction of acute myocardial infarction compared with a Sensitive Troponin I and myoglobin in a population of patients in the chest pain clinic.
Damaske, Ana	magna cum laude	Univ.-Prof. Tommaso Gori PD Dr. Philip Christian Wenzel	Influence of endothelial function and hemorheological variables on coronary blood flow velocity.
Dias Wickramanayake, Jennifer Maria	magna cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber	Crosstalk between mitochondrial and NADPH oxidase-produced reactive oxygen species in the setting of endothelial dysfunction caused by NTG
Diestelmeier, Simon Niklas	magna cum laude	Univ.-Prof. Dr. med. Philipp Wild Univ.-Prof. Dr. Stefan Blankenberg	Relationship between physical activity and cardiac risk factors and left ventricular cardiac function. Results of the population-based Gutenberg Health Study
Eilmes, Andrea Susanne	cum laude	Univ.-Prof. Dr. Christine Espinola-Klein PD Dr. Eberhard Schulz	Influence of chronic renal failure on peripheral arterial disease and coronary heart disease
Frieß, Jan-Oliver	cum laude	PD Dr. Ascan Heinrich Warnholtz Univ.-Prof. Tommaso Gori	The analysis of the right ventricle by means of 4D Echocardiography. Methodological comparison of 2D, 4D Simpson and 4D models against the reference standard of cardio-MRI
Götte, Thorsten	magna cum laude	Prof. Dr. Ewald Himmrich Prof. Dr. Sabine Genth-Zotz	Primary and secondary prevention of sudden cardiac death in patients with dilated cardiomyopathy and clinical outcome in long-term follow-up
Heeren, Tjebo Frédéric Chomé	magna cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber	Vascular dysfunction under hyperglycemic conditions. Mechanistic studies in the streptozotocin rat model and in cultured human primary endothelial cells
Herkenhoff, Stephanie Heidi Gertrud	magna cum laude	Univ.-Prof. Dr. Stefan Blankenberg Univ.-Prof. Dr. med. Philipp Wild	The influence of selenium substitution on the glutathione peroxidase activity and flow-mediated dilation (FMD) in patients with coronary heart disease

MD degrees 2012/2013

Name	Mark	Committee	Title
Holz, Nina	cum laude	Prof. Dr. Ulrich Dietz Prof. Dr. Sabine Genth-Zotz	Clinical and angiographic acute and long-term results with the use of short stents (stents) for the treatment of coronary lesions
Jakobs, Carsten	cum laude	Univ.-Prof. Dr. Stefan Blankenberg Univ.-Prof. Dr. Christine Espinola-Klein	The importance of Rantes/CCI5 in the prognosis of coronary heart disease
Kamuf, Jens Michael	summa cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber Prof. Dr. Johann Bauersachs	Differences in the effect of organic nitrates pentaeritrithyl-tetranitrate and isosorbide-5-mononitrate on the development of tolerance, oxidative stress and endothelial function in animal models and mechanistic studies of Nitrosylation in biochemical model systems
Orbán, Klara	cum laude	Prof. Dr. Ulrich Dietz Prof. Dr. Sabine Genth-Zotz	Clinical and angiographic results in the interentional treatment of coronary artery disease by local administration of paclitaxel eluting balloons with bare metal stent versus sirolimus-eluting stents in a prospective randomized study
Ruth, Ines Beatrice Friederike	rite	Univ.-Prof. Dr. Ludwig Sacha Weilemann Prof. Dr. Dr. Helmut Schinzel	Thrombozytenaggregationszeit gemessen mit dem PFA-100® an Patienten mit Angina pectoris in der Notaufnahme und die Auswirkungen auf das Outcome der Patienten
Scheiba, Oliver	cum laude	Prof. Dr. Sabine Genth-Zotz PD Dr. Hans Ulrich Hink	Introduction of a Chest Pain Unit at the 2 Medical Clinic of the University Medical Center of Johannes Gutenberg University Mainz. Impact on the hospital stay of patients with acute coronary syndrome. A retrospective analysis
Schleer, Kathrin Julia	cum laude	Univ.-Prof. Dr. Stefan Blankenberg Univ.-Prof. Dr. Christine Espinola-Klein	The prognostic significance of Adiponectin concentration for risk stratification in patients with coronary heart disease (atherogene study)
Simon, Helge Ulrich	magna cum laude	Prof. Dr. Hans-Jürgen Rupprecht Prof. Dr. Sabine Genth-Zotz	Detection and quantification of myocardium salvaged by two-dimensional echocardiography during percutaneous transluminal angioplasty of the infarct-associated coronary artery stenosis
Steven, Sebastian	summa cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber Prof. Dr. med. Gerd Hasenfuß	The influence of the AT1-receptor blocker telmisartan on nitroglycerin-induced nitrate tolerance and endothelial dysfunction

MD degrees 2012/2013

Name	Mark	Committee	Title
Thomas, Christina	magna cum laude	Univ.-Prof. Dr. med. Philipp Wild Univ.-Prof. Dr. Stefan Blankenberg	Distribution of left ventricular cardiac dysfunction in the general population and their association with cardiovascular risk factors and diseases
Wimmer, Eva	cum laude	Prof. Dr. med. Georg Alfons Horstick Prof. Dr. Karl-Friedrich Kreitner	The significance of microvascular obstruction and late enhancement using cardiac MRI in acute myocardial infarction in the acute phase and in the 12 months follow up
Zlotina, Irena	cum laude	Prof. Dr. Bernd Michael Nowak Prof. Dr. Sabine Genth-Zotz	Chest Pain Unit in the Heart Network
Zurmeyer, Sarah Anna Lisa Marie	magna cum laude	Univ.-Prof. Dr. Thomas Münzel Univ.-Prof. Dr. Andreas Daiber	ALDH-2-deficiency leads to increased oxidative stress. Evidence for indirect antioxidative properties of ALDH-2

Specialist degree 2012/2013

In the years 2012 and 2013, nine doctors of the Department of Medicine 2 completed successfully their certification examination:

- **Dr. med. Frank Schmidt**
  Internal medicine and cardiology 2012
- **Dr. med. Kerstin Hoffmann**
  Internal medicine 2013
- **Dr. med. Ingo Sagoschen**
  Intensive medicine 2013
- **Dr. med. Kai Helge Schmidt**
  Cardiology 2013
- **Sabine Liersch**
  Internal medicine 2012
- **Dr. med. Amelie Biedenkopf**
  Cardiology 2012
- **Dr. Martin Geyer**
  Internal medicine 2012
- **Dr. Philipp Nikolai**
  Subspecialty qualification "flight medicine" 2012
- **Denise Kämpfner**
  Internal medicine 2013

Education in the CPU

4th Course "Nurse specialist for the Chest Pain Unit"

The fourth training for nursing experts for Chest Pain Units began in September 2013 in the Department of Medicine 2.

The part-time modular training offers participants the possibility to selectively adapt their professional expertise to the specific requirements in the Chest Pain Unit and thus fulfills the recommendation of the DGK for a specific training for the nursing staff involved in cardiological emergencies. The training is unique in Germany and since its opening in 2012 it has attracted a number of participants coming from all around Germany.

Over the past four events, a total of 43 nurses completed the training successfully, 19 of them from the Department of Medicine 2, University Medical Center Mainz. Almost 50 % of our nurses have now obtained this specialist's degree.

Not only our patients, but also our new employees and young professionals benefit from this course. The certification of our Chest Pain Unit by the DGK represents for us a seal of approval, certifying that a high quality of care is ensured for the patients admitted to our Chest Pain Unit. The certification is reviewed every three years; this re-certification process is a warranty that this level will be maintained over the years.

The previous participants of the training came from nine different states: Bavaria,

The participants to the fourth course

Baden-Württemberg, Saarland, Rhineland-Palatinate, Hessen, Thuringia, Saxony, North Rhine-Westphalia, and Lower Saxony. Some clinics have registered their employees for the third time in a row. For the participants, in addition to the excellent teaching program, the platform offers the possibility to exchange ideas with colleagues from all over Germany and get to know the CPUs from other clinics.

The instructors for the training are recruited mainly from employees of Department of Medicine 2, supported by colleagues from other departments (Anesthesia, Legal Department, conflict counseling center). Without the active support of motivated colleagues from the medical and nursing team of the Department Medicine 2, the training would not be feasible. All participants deserve a special thank you.

The course's management is in the hands of Gabriele Maas, Graduate Nursing Degree (FH) and Dr. Sebastian Sonnenschein.

For the next "Chest Pain Unit Course", which will begin in November 2014, more than half of the places are already taken.


Sie finden die aktuelle Übersicht unseres kompletten Kurs-Portfolios unter
www.akademie.dgk.org

Chest Pain Unit kompakt

Sehr geehrte Kolleginnen und Kollegen,

in diesem Jahr bietet die Weiter- und Fortbildungs-Akademie der Deutschen Gesellschaft für Kardiologie erstmalig den „Chest Pain Unit kompakt"-Kurs an, dessen Programm aus den Erfahrungen des CPU-Zertifizierungsprozesses entwickelt wurde und der sich an Ärzte richtet, die in einer CPU arbeiten.
Aktuelle Daten belegen, dass die Prognose von Patienten mit Brustschmerz und Herzinfarkt seit Einführung der CPUs deutlich verbessert werden konnte. Unser Ziel ist es, Ihnen in diesem Kurs Tipps und Tricks zur Verbesserung der Arbeitsabläufe an die Hand zu geben, die die Zeiten vom Eintritt des Patienten in die Klinik bis zur invasiven Versorgung weiter verkürzen.

Die Kursinhalte sind:
- Standard Operating Procedures in der CPU
- Umsetzung der aktuellsten Leitlinien
- Diagnostik und Therapie der in der CPU am häufigsten auftretenden Krankheitsbilder
- Die wichtige Schnittstelle zu den niedergelassenen Kolleginnen und Kollegen
- Interaktive Hands-on-Kurse in Kleingruppen zu den Themen EKG, Reanimation und Herzecho.

Wir freuen uns darauf, Sie zum ersten „Chest Pain Unit kompakt"-Kurs in Mainz begrüßen zu können.

Mit herzlichen, kollegialen Grüßen,

Prof. Dr. Thomas Münzel **Prof. Dr. Evangelos Giannitsis**

FORTBILDUNGSKURS

Chest Pain Unit kompakt

Mainz
08.11.2013 – 09.11.2013

Wissenschaftliche Leitung:
Prof. Dr. Thomas Münzel
Prof. Dr. Evangelos Giannitsis

CHEST PAIN UNIT

15 CME-Punkte*

WEITER- UND FORTBILDUNGS AKADEMIE KARDIOLOGIE

CPU Compact course for Physicians

The Academy of the German Society for Cardiology offered for the first time the "Chest Pain Unit compact" course, whose program was developed from the experiences of the CPU certification process and was aimed at doctors who work in a CPU.

The aim of this course was to provide tips and tricks to improve operations that might come in handy for physicians who take care of patients admitted to a CPU

The feedback was very positive, and it was decided to hold a new course next year, this time in Heidelberg.


Participants and teachers of the course

INHALT

Highlights of Publications 2012/2013

INHALT

Foundation, Prizes and Awards

STIFTUNG
MAINZER HERZ

Foundation Heart of Mainz

Launched in 2007 by Professor Münzel, the Foundation has the purpose to promote research, teaching and patient care at the Department of Medicine 2. Treatment starts with the prevention of the diseases and it ends with an optimal management of patients who have suffered an acute myocardial infarction.

Each year approximately 300,000 people suffer a heart attack in Germany. Approximately 65,000 people die of it. By 2025, experts predict a doubling of that number.

Therefore, the efforts in terms of research and prevention must be reinforced all the time. In order to identify the causes of disease and develop new therapies, preclinical and clinical research is important.

The diagnosis and treatment of acute myocardial infarction in our Chest Pain Unit as well as the diagnosis and treatment of coronary heart disease and arrhythmias in the Units of the Department of Medicine 2 are a major concern of the Foundation. To achieve these ambitious goals, high-quality research and first-class training of doctors and nurses are necessary, along with a modern equipment and facilities.

The main focus for the future will be to improve prevention and promote health, improve the quality of life of the people and in particular of children and adolescents. A forward-looking and responsible lifestyle can prevent many cardiovascular diseases.

The Foundation Heart of Mainz has therefore taken on the task of recognizing the early stages of heart attack and other cardiovascular diseases and to fight effectively to counter the predicted increase in these diseases.

With its Children's Health Academy the Foundation Heart of Mainz particularly aims its programs at children and young people.

Financed by the Heart of Mainz Foundation in 2012

Dr. med. Zsófia Bárdonicsek
36,000 Euro
"Interventional Valve therapy in the University Medical Center Mainz – Scientific coordination"
1.09.2012 – 31.08.2013

Prof. Dr. Andreas Daiber and Dr. rer. nat. Matthias Oelze
40,000 Euro
Effects of sGC activators on nitrate tolerance

Financed by the Heart of Mainz Foundation in 2013

Dr. med. Torsten Konrad
Stipendium, 42,000 Euro
for research projects in the area heart rhythm disease and electrophysiology:

- Characterization of patients with atrial fibrillation
- Characterization of the outcome after ablation of persistent atrial fibrillation
- Characterization of patients with early repolarization in the ECG
- Characterization of psychological risk factors in patients with atrial fibrillation
- Characterization of patients with inadequate sinus tachycardia

Prof. Dr. med. Philipp Wild
Research support for a total of 63,000 Euro
for the Project:
„GHS Biomarker program – Galectin-3 for the molecular characterization of heart failure“

„We have to do something!“ Professor Münzel interviewed by Heike Zahn

In the Children's Health Academy organized by the Foundation Heart of Mainz, school classes can learn all about the heart and circulation and, above all, why smoking is extremely harmful.

There is always need for discussion in the lectures of the Children's Health Academy

Professor Münzel, why did you initiate the Children's Academy Health?
One major concern of Foundation Heart of Mainz – and the Child Academy is indeed a project of the Foundation – is prevention, prevention, prevention of diseases.
We know that our children in Germany are among the fattest in Europe. As well, smoking is another major problem for children and therefore we decided we must do something!

You have four children – how did you manage that none of them smokes?
The negative experience in our family was the most important. My parents have died of the consequences of smoking. Feelings against smoking are quite strong in my family, but I'm glad that it was an independent decision of my children to say no to smoking, despite all the advertising, direct and indirect.

Four children of your own, could be that the reason why you seem to have such a good relationship with the children, and you involve them so effectively into your presentations?
Possibly. I am very pleased that it always works, and that there isn´t much of a distance between the children and the "Professor"; I am very pleased that the children remain very attentive all the time. I think that the topic smoking is particularly interesting for them. They see people smoking in their music videos, in the movies and in their families, unfortunately. But of course I also try to involve them in my presentation and continuously ask them questions.

What surprises me again and again is that up to 50 to 70% of the children we invite to the academy smoke or have smoked before. And these are children in the age of 12 to 13 years! This is really unimaginable to me. On the other side, this shows that the group to which we aim is precisely the right one. There are students of secondary schools and junior high schools from across the region and especially from rural areas. These are precisely the children whom we have to convince with full power they should quit smoking or never ever again have a cigarette in their hands. Some of them will even bring their parents to quit smoking. In some cases, we already succeeded in that, and I'm obviously very proud of it.

Where are the risks in our society for children when it comes to smoking?
The automatic cigarette vending machines. It is very clear so that they are the main source where the kids get their cigarettes. Although it is true that by law it must be documented (for Instance with a debit card or similar) that you are over 18 to buy cigarettes, the kids always manage to find ways to obtain these cards and can then use the vending machines.

In England it has been found two years ago that children buy 36 million cigarettes per year from the vending machines. This has led the British government to ban these machines completely. Other countries in Europe have followed quickly. I hope that it is possible to enforce the ban of vending proposed by the legislative initiative of the Greens and that we can very soon get rid of the 350,000 vending machines in Germany. What most annoys me is that in Germany most commonly cigarettes and chewing gum machines are positioned side by side: one machine attracts children, the other one sells them cigarettes! Even more, this often occurs close to schools.
The intent is clear, we have to intervene immediately and tear apart this combination.

How bad is the new trend, the so-called hookah smoking?
The hookah is a way to smoke that is much more dangerous than the usual cigarettes. The problem is that the operating temperature of the Hookah is about 400 degrees Celsius.

The result is that toxic substances that are burned during normal cigarette smoking with 1,000 degrees Celsius do not burn up in the hookah, and therefore the concentration of harmful substances is extremely high. Smoking has almost as many negative consequences as 50 to 100 cigarettes. Quite dramatic.

Chewing gum and cigarette machine hang next to each other – a common sight today in Germany

One would not think that. On the contrary, we think so commonly a hookah is much milder than regular cigarettes.
Yes, that's exactly the problem, there are very mild flavors added, such as apple tobacco. And young people particularly like these flavors. This way children are attracted into the hookah bars, which are sprouting up in Germany like mushrooms these days, especially in rural areas.

I think that the Government needs to put great value on prohibiting to children the access to these hookah bars in the future.

Why do you think that it is particularly important to invite children from rural area to the Children's Academy?
We have always had the ambition to be active region-wide as a Foundation. Together with the Ministry of Education, we have achieved that more than 50 schools have applied for the Children's Academy, which is great. We then increased our offer from three days last year to now ten days.

With the positive feedback we get from the schools I can easily imagine that we could even prolong the Children's Academy to four weeks.

Can you afford it, four weeks in a row?
It must be said that education in medical prevention requires a lot of volunteer force, materials, equipment and organizational and financial means. At the moment we are supported by private sponsors to whom I am very grateful. But once we have shown how useful and sustainable our work with the children is, then it should also be possible to obtain public funds from the region. We are also trying to involve the health insurance companies. We are convinced of the concept and the feedback from the schools is very positive.

In fact, the number of smoking children declines in Germany. So one might ask, do you really need the Children's Academy?
A very strong "yes" ! The numbers are declining, but we are still the nation with the highest smoking rates among children. 1.3 million children smoke, so that we are at the 2nd Place in Europe after Ukraine.

With our initiative, we make very clear points from which policy makers can and must start: vending machines must be removed, as I said, and I think it's important the tobacco tax to increase, so that the price is doubled to ten instead of five euros per box. This would cause the children to smoke less, as they have to pay more for the cigarettes.

It would also be interesting to see how printing pictures of dying patients, patients without feet or with black lung, as has just been launched in Australia, will help the cause. We do not have any statistical analysis, but at least our children at the Children's Academy have speculated that even if It does not bring people to quit smoking, it stops many from beginning.

Your own parents have died from effects of smoking.
How did you experience this trauma?
That was very dramatic. My father died of a heart attack, a sudden death, one thing to which one is quite unprepared. My mother died of lung cancer after a long illness that carried on for one year. Both were heavy smokers. Of course you cannot definitely say whether this was now the exact reason of their death, but smoking is surely a point that has helped to make both died in their early fifties.

How dangerous is passive smoking?
There are many new scientific findings that show how dangerous passive smoking is, especially for children. At ten to eleven years of age, children who are exposed to two to three years of smoke already have atherosclerotic changes in the carotid arteries and their vascular function in the forearm is reduced. If children also have high cholesterol and at the same time have significant overweight, then you have a time bomb here.

But even the adults must not underestimate the problem of passive smoking.

There is a study from the United States, which has compared two cities, both of a size of approximately 250,000 inhabitants. In both cities, about 40,000 people have smoked. Then smoking in public places such as city hall, swimming pools or sports stadiums was banned in one city. Even though the total number of people smoking did not change, in the city where the smoking ban in public places was enforced, the rate of heart attacks dropped by 40% within a year, an incredible number!

The Foundation is grateful to Ms Zahn for realizing a movie about the Academy.

The film can be viewed under:

http://www.youtu.be/wZAE_JXAnhM

Student Sebastian Hollmann in resuscitation training

That is why I am asking for this strict ban on smoking in public places. In Germany we have the problem that the non-smoking protection law is jurisdiction of the states; that is, each state does what it wants. This is absolutely unacceptable. Why not ban smoking for example at the Coface Arena in Mainz? Even Arsenal or Barcelona have smoke-free stadiums, we can do that too.

Have you ever smoked?
No, I have never smoked. I believe that what always stopped us children from smoking the smoke of my parents in the car. It was so bad for all of us, a true disaster. That's why I never felt the need to smoke.

Was it hard to bring the students in and recruit the doctors for voluntary work?
No, not at all. For example, Dr. Lott, who makes the resuscitation training, was immediately recruited to the Children's Academy. The students are always fully committed to it. We must organize that the doctors are allowed to take time from their clinical work. There is a team of six to eight people and all things live from their voluntary commitment. But I think if one is convinced of what he does, it is easy to involve the others. We have even succeeded to recruit the famous cook Johann Lafer for the Children's Academy, he teaches the participants how to cook healthy, and I am very happy of having involved him because his schedule is extremely full.

This is true of yourself, too. Your whole commitment to the Foundation Mainz heart is on a voluntary basis, your job as chief doctor at the University Medical Center Mainz comes on top.
I think that the Foundation is enormously important. The University Medical Center Mainz also profits from it because we can also support research projects. We now have 130 members in the "circle of friends" and 65 members of the Board of Trustees. We can annually generate approximately 300,000 euros, of which we spend two-thirds again during the year. So about 200,000 euros are spent each year in projects, including research projects in the Department of Medicine 2, patient care, and the Children's Academy.

Last question: What do you do yourself for your heart health?
That's a good question (laughs). For me personally, of course, exercise is essential. I have decided for Nordic walking and golf. Golf is relaxing and nordic walking is a form of movement that activates the whole body without overloading it. Golf makes more fun, though.

Of course, I have seldom time, but I try as often as possible to do something.

Thank you Professor Münzel.

The interview was conducted by Heike Zahn.

Events of the Foundation Heart of Mainz 2012 and 2013 — An Overview

- **3. Ball of the Foundation Heart of Mainz**
  10th November 2012
  The third ball of the Foundation took place on the 10. November 2012 in the Electoral palace of Mainz. Thanks to the support of the many participants and friends, it was a huge success.
  (Collage above)

- **The Foundation's presentations series**
  27th February 2013
  The Foundation Heart of Mainz lecture series continued in 2013. During or after the lectures, speakers usually take questions from the audience to answer them.
  (Picture below)

... about the themes

- "Timely resuscitation: the most effective therapy for saving lives" (Univ.-Prof. Dr. med. T. Münzel)

  "Women's hearts are different" (Univ.-Prof. Dr. med. Christine Espinola-Klein).

Professor Münzel answered questions from the audience on the subject of resuscitation

Children's health academy

13th – 17th May and 10th – 14th June 2013

1.3 million children in Germany smoke, the entry age is between 14 to 15 years. These and many other frightening facts suggest to actively work against this trend. The Foundation Heart of Mainz, with its initiator Professor Thomas Münzel has taken on the task with the "Children's Health Academy" to provide information on the prevention of heart diseases.

From the 13th to the 17th of May and between the 10th and the 14th of June, five schools had the opportunity to participate in the prevention project of the Foundation at the Department of Medicine 2, University Medical Center Mainz.

After a lecture entitled "Smoking" by Professor Thomas Münzel and the ntroduction to the cardiovascular system by Professor Christine Espinola-Klein, kids were offered the cardiovascular game, a visit to the walk-in heart model, a resuscitation course and other activities.

Charity golf tournament Foundation Heart of Mainz in favor of the Gutenberg Health Study

27th May 2013

On Monday, the 27th May 2013 the first charity golf tournament ot the Foundation took place at the Rheinhessen Golf Club, St. Johann Hofgut Wißberg. Many avid golfers were part of this event; the very nice weather also helped. The entire proceeds of the Tournament were donated to the Gutenberg Health Study. In this important study, a total of 15,000 inhabitants were included from Mainz, Ingelheim and Bingen. The aim of this study is to find the reasons of heart attack in a large population.

After the award ceremony, a dinner was held at the Hofgut.

The leader of the study, Professor Wild received a donation of 15,000 euros for the Gutenberg Health Study.

The Foundation Heart of Mainz thanks all the participants of the golf tournament!

Happy faces at the charity golf tournament – The Foundation Mainz heart says thank you.

Beaming faces at the charity golf tournament – the foundation Heart of Mainz is grateful

The Children's Academy hosted by Johann Lafer

29th Juni 2013

On the occasion of this year's "Children's Academy Health", the Foundation Heart of Mainz together with star chef Johann Lafer organized an event on "healthy cooking and diet" for school classes in grades 6 – 8 from schools from all over Rhineland-Palatinate.

Following the "Children's Health Academy" in May and June 2013, this was another event focusing on an important aspect of prevention.

More and more children are overweight; as a result of this, they suffer very early from illnesses such as diabetes and high blood pressure.

Professor Thomas Münzel and star chef Johann Lafer try to fight this trend. It was for a great honor that Johann Lafer committed to help the "Children's Health Academy". Together with Professor Münzel, he gave the children and young people an overview of healthy eating and also spoke about difficult issues such as obesity. Participants of the event were school classes of secondary schools from Idar-Oberstein, Ingelheim, Westhofen and Wöllstein.

A common lunch rounded off the day in the school cafeteria of the high school at the Roman fort in Bad Kreuznach.

■ **News from the Foundation Heart of Mainz**

11.09.2013

On Wednesday, the 11th September 2013, another information evening of the Foundation Heart of Mainz was held in the auditorium of the building 505.

First, Professor Thomas Münzel presented a project that is very important to the Foundation, the Children's Health Academy. He then reported on the latest results of the annual congress of the European Society of Cardiology in Amsterdam.

Professor Thomas Meinertz from Hamburg joined us to give the audience an update on blood clotting agent. Focus of the presentation was the question: What role does warfarin have today?

During or after the lectures both speakers answered questions from the audience.

STIFTUNG
MAINZER HERZ

Margarete Waitz Foundation

The Margarete Waitz Foundation was founded in 2004 from the estate of the late Mainz citizen Margarete Waitz as a charitable foundation.

Its task is to support charitable purposes at the Department of Medicine 2 and to promote particularly medical and scientific talents.

The Foundation is equipped with 1.4 million euros and can provide funding for statutory purposes. The winners of the doctoral scholarship must have completed their medical training in the Department of Medicine 2 and must have made a significant contribution to medical and scientific research.

The winners for the doctoral scholarship of Margarete Waitz Foundation

13 candidates were invited to apply for the Margarete Waitz Promotion Prize 2012, seven submitted an application.

The Promotion Prize 2012 was awarded to two winners. Both works had been graded summa cum laude and the Board of the Foundation decided that it would have unfair to select one of the applicants over the other.

Awards went to:

- **Dr. med. Jan Moritz Brand**
  Mechanisms of eNOS-recoupling by HMG-CoA Reductase-inhibition in a rat model of streptotoxin-induced diabetes
- **Dr. med. David J. Pedrosea Carrasco**
  Effect of endothelial progenitor cell implantation on myocardial fibrosis in patients with coronary artery disease.

MARGARETE WAITZ STIFTUNG
II. Medizinische Klinik u. Poliklinik des Klinikums der Johannes Gutenberg - Universität Mainz

Research prize awardee 2012
left to right: Univ.-Prof. Dr. Dr. R. Urban, Dr. M. Knorr, Univ.-Prof. Dr. T. Münzel

Robert Müller Foundation

The Robert Müller Foundation invests directly in the science and research at the 2. Department of the University Medical Center of Johannes Gutenberg University Mainz, primarily in the area of Angio-Cardiology, by supporting teaching and research, by promoting certain technical and time-limited research projects, scientific work and publications and through the provision of aid in any form of research grant.

Board and Advisory Council and have decided to award a research award and a doctoral thesis prize for the year 2012.

The awards were given to:

- **Robert Müller Research Prize**
  Dr. med. Maike Knorr
  Nitroglycerin-induced endothelial dysfunction and tolerance involves adverse phosphorylation and S-Glutathionylation of Endothelial Nitric Oxide Synthase
- **Robert Müller doctoral thesis Prize**
  Paul Stamm

Doctoral thesis prize 2012
Left to right:
Univ.-Prof. Dr. Dr. R. Urban,
Paul Stamm,
Univ.-Prof. Dr. T. Münzel

Gertrude Spitz Science Award for Univ.-Prof. Dr. T. Rostock

With the certificate of UCB Pharma's prize:
from left to right:
Univ.-Prof. Dr. Christine Espinola-Klein, Dr. Jörn Fredrik Dopheide and
Univ.-Prof. Dr. Thomas Münzel

Prof. Dr. Thomas Rostock receives the Gertrud Spitz Science Award

Prof. Dr. med. Thomas Rostock received the prize offered by the German Foundation for Heart Research (DSHF) – daughter organization of the German Heart Foundation – and the German Society of Cardiology (DGK) for his research achievements in the field of electrophysiology.

The award was presented at the Annual Meeting of the German Society of Cardiology in April 2012 in Mannheim.

Professor Rostock (39) has been promoted in July 2011 chief of Electrophysiology of the Department of Medicine 2 at the University Medical Center Mainz.

The prize, named after Gertrude Spitz, wife of the founder Franz Herbert Spitz, is worth 10,000 Euros and was awarded for the first time in 2012 for outstanding achievements in electrophysiology to a person of exemplary character.

UCB Pharma Prize goes to Dr. Jörn Fredrik Dopheide

The 10,000 euro prize is awarded by the German Society for Angiology and UCB Pharma.

This year, the prize was shared by Dr. Jörn Fredrik Dopheide of the University Medical Center of Johannes Gutenberg University in Mainz and PD Dr. Matthias Hoke from the Medical University of Vienna.

The award was presented on 09.17.2013 on the occasion of the 16th annual three countries meeting of the Austrian, German and Swiss Societies of Angiology in Graz. It is the highest endowed price that the German company gives for Angiology.

Dr. Dopheide received the prize for his work entitled "Phenotypic characterization of pro-inflammatory monocytes and dendritic cells in peripheral arterial disease (PAD)", which was published in 2012 in the journal "Thrombosis and Haemostasis".

The work was done in the Department of Medicine 2 under the direction of Prof. Dr. Thomas Münzel in the group of Prof. Dr. Christine Espinola-Klein in cooperation with Prof. Dr. Andreas Daiber (Department of Medicine 2, Institute of Molecular Cardiology), Prof. Dr. Tommaso Gori (Department of Medicine 2) and Dr. Markus Radsak (Department of Medicine 3, Institute of Immunology).

In the news in 2012

Rasche Hilfe bei Herzinfarkt

AUFKLÄRUNGSKAMPAGNE Universitätsmedizin sensibilisiert zum Thema Brustschmerz

Mainz als erste Stadt rauchfrei?

ZIGARETTENKONSUM Um Minderjährige Rauchern / Teenagern stark gefährdet

Allein gegen die Automaten

Was genau macht uns krank?

GUTENBERG-GESUNDHEITSSTUDIE Über 15 000 Menschen werden untersucht

Breite Front gegen Zigarettenauton
Sorgen wegen Wasserpfeife

INHALT

Flight noise events

„Angriff auf die Gesundheit“

„Psssst, ihr Flieger!“

STIFTUNG MAINZER HERZ

Fluglärm erhöht Infarktrisiko

„Pssst, ihr Flieger“ – bitte kein Lärm

Stress und Bluthochdruck

STUDIEN Deutsche Herzstiftung fordert strikten Nachtflugverbot

„Fluglärm macht krank“

Herzinfarktrisiko steigt deutlich an

LÄRM Diskussionsabend im Bürgerhaus Gustavsburg

Britische Studie bestärkt die Fluglärmgegner

Offener Brief an die Kanzlerin

FLUGLÄRM Spitzenmediziner in der Offensive

„Vorstand von Lufthansa ablösen“

STARTVERFAHREN Mürzel attackiert Airline

INHALT

Events
of the Department of Medicine 2

Events organized by the Department of Medicine 2

Datum	Veranstaltung	Referate
15.08.2012	**First Mainz heart valve evening**	■ Modern aortic valve surgery ■ 4 years transcatheter aortic valve implantation in Mainz What is important? ■ Instructive TAVI cases from the heart cath lab ■ Limits of mitral valve reconstruction ■ Is this patient a mitraclip candidate? ■ Superiority of 3D echocardiography – the difficult mitraclip case
04.09.2012	**News in Caridology**	■ In cooperation with the Lions Club Mainz-Gutenberg
28.09.2012	**Fall symposium nurses in heart failure**	
17.10.2012	**CHD heart failure and heart rate in the cardiovascular continuum**	
20.10.2012	**Crossing borders in thediagnosis and treatment of PAD**	■ Contrast-enhanced sonography ■ Imaging in renal failure ■ Multimodal treatment concept of complex foot lesions in PAD ■ Passing boundaries – Pilot vessel Endocrine Surgical-station ■ Possibilities and limits of the conservative treatment of peripheral arterial disease ■ PTA in the lower leg – what are the limits? ■ Bypass procedure with limited availability of endogenous vein ■ Limits of bypass surgery exceed – revascularization ■ pedal arteries and their side branches
26.-27.10.2012	**Workshop "Cardiology Live"**	■ The network structure – opportunities and challenges of medical practice ■ Live transmission of a percutaneous aortic valve intervention ■ Aortic and mitral valve interventions – results to date ■ Live transmission of a complex PTCA ■ Myocardial ischemia – causes, diagnosis, treatment options ■ Platelet therapy after PTCA ■ Importance of renal denervation

Veranstaltungen der 2. Medizinischen Klinik

Datum	Veranstaltung	Referate
14.11.2012	**First Mainz heart rhythm evening**	■ Presentation of the Department of Electrophysiology ■ Differential treatment of ventricular tachycardia ■ Arrhythmias and heart failure ■ Cardiac ion channel disorders and arrhythmias in children ■ Cardiac Device Therapy
30.01.2013	**Hot Topics in cardiology and heart surgery**	■ Diagnosis and treatment of myocarditis ■ Update Gutenberg Health Study ■ Pro-con debate Mitraclipping ■ Update anticoagulants 2013
05.03.2013	**Heart at risk** **Cooperation event with the Red Cross hospital Alzey**	
13.04.2013	**Top College of Cardiology** **Cooperation event with Astrazeneneca GmbH**	■ Modern therapy of acute coronary syndromes ■ Experience with the new biodegradable stent ■ The first SGLT-2 inhibitor – New options for modern diabetes therapy? ■ AMNOG: innovation and cost pressure ■ LIVE in A Box – Cases from the cardiac catheterization laboratory ■ Importance and dangers of TRIPLE therapy after the introduction of new anticoagulants
26.06.2013	**The Cardiology spectrum** **The Heart Network Mainz presents itself: therapy of coronary heart disease**	■ "At the pulse of time" – Effective therapies for heart failure and coronary artery disease ■ Supply structures Chest Pain Unit ■ CardioAcut in Mainz: Optimal interface for outpatient and inpatient care of patients with an acute coronary syndrome ■ Examples from practice: How do I treat stable coronary heart disease? ■ Drug therapy versus intervention ■ update renal denervation

Abbott Vascular

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We thank all the authors and contributors to the Annual Report 2012/2013.

All patients seen on pictures have given their consent.

You can find this and the annual reports of previous years for download on the Internet at the address:
www.unimedizin-mainz.de/2-med/startseite/jahresberichte.html

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Logo designed by Peter Schmidt, Hamburg

FOUNDATION

HEART OF MAINZ

Department of Medicine 2

University Medical Center Mainz

Dear all,

Each year approximately 300,000 people suffer a heart attack in Germany. 65,000 people die of it. By 2025, experts predict a doubling of that number.

Therefore, the efforts in terms of research and prevention must be reinforced all the time. In order to identify the causes of disease and develop new therapies, preclinical and clinical research is important. The diagnosis and treatment of acute myocardial infarction in our Chest Pain Unit as well as the diagnosis and treatment of coronary heart disease and arrhythmias in the units of the Department of Medicine 2 are a major cous of the Foundation.

To achieve these ambitious goals, high-quality research and first-class training of doctors and nurses are necessary, along with a modern equipment and facilities.

The main topic for the future will be to improve prevention and promote health, improve the quality of life of the people and in particular of children and adolescents. Healthy lifestyle changes can indeed prevent or even cure cardiovascular diseases.

The Foundation Heart of Mainz especially aims its programs at children and young people with its Children Academy of Health.

In order to fulfill these tasks, we need your financial support.

Sincerely

Professor Thomas Münzel
Foundation Heart of Mainz

Launched in 2007 by Professor Münzel, the Foundation has the purpose to promote research, teaching and patient care at the Department of Medicine 2, University Medical Center Mainz. Treatment starts with the prevention of the diseases and it ends with an optimal management of patients who have suffered an acute myocardial infarction.

The Foundation Heart of Mainz has the following goals to

- intensify the fight against myocardial infarction and other cardiovascular diseases in Mainz
- promote research and training
- improve patient care and the medical equipment at the Department of Medicine 2
- optimize the diagnosis and treatment of coronary heart disease (CHD) and its risk factors, cardiac arrhythmia and peripheral arterial occlusion (PAOD)
- establish scholarships
- improve prevention and promote health.

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2. Medizinische Klinik und Poliklinik

Unser Wissen für Ihre Gesundheit

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