ANNUAL REPORT – YEAR 2012

FOUNDATION
HEART OF MAINZ

the fifth year

Foreword

Ladies and Gentlemen,
Supporters of the FOUNDATION HEART OF MAINZ,

14th December 2012, marked the **5th Anniversary of our Foundation**, and we are proud and happy to celebrate this anniversary! Our Foundation is young but well established, and still full of energies. Like for previous years, 2012 was a year full of activities and developments, which are summarized in this booklet.

The **main theme** we have chosen this year is **heart failure**. Heart failure is becoming a true health and social issue in modern countries due to the progressive increase in the incidence of this dangerous and chronic disease; one the other side, this disease is a true window of opportunity for technological and pharmacological progress, and the numerous innovations, both drugs and devices, in this field have lead to a significant improvement in life expectancy in the very last years. Nevertheless, heart failure is still a **disease with a serious prognosis**. In the following pages, we will particularly address the symptoms of heart failure – how do physicians make the diagnosis of heart failure, what are the symptoms? How can I help my physician, or should I rather keep quiet? How often do I need to go to my family doctor for a check-up? In this article we will present you with the most recent facts on this very important clinical disease.

Next, we will report on the many events conducted by our Foundation in 2012.

New to the program this year, we started a series of lectures entitled **"The** FOUNDATION HEART OF MAINZ **informs"**. There were four sessions: one was the traditional November event organized in cooperation with the German Heart Foundation. This year's title was "Heart in danger." In the spring, we organized our third goal shooting, which was again moderated by the official speaker of the Mainz Bundesliga football club Klaus Hafner. With this event, we opened our Children's Academy. The opening "shootout" was between Harald Strutz, President of the 1st FSV Mainz 05, Professor Georg Krausch, President of the Johannes Gutenberg University and myself; Professor Krausch won.

The Children's Academy was a three-day event in which children of the sixth and eighth class of secondary schools of Mainz, Wöllstein and Bad Kreuznach participated. The children's feedback on this event consisting of lectures on health, a cardiovascular game, a walk-in heart and an autograph session with **Jan Kirchhoff and Christian Heidel** (football player and manger of the 1st FSV Mainz 05) was more than positive.

Like in the last two years, **Udo Lindenberg** made us a present by painting a new picture for the Foundation: motive this time was **"UDO as a center forward"**; Mr Strutz and I were happy to hand over the painting to the best bidder, Mr. Hanssmann of the AXA insurance.

In **November** we held our traditional **Mainz Heart Foundation Ball**. With the **proceeds of the evening**, we purchased an ultrasound machine for the Gutenberg Health Study (GHS). The total proceeds of the evening amounted to a gratifying 100,000 euros. Also thanks to these donations, the GHS is still on track with its ambitious plan: between the start in 2007 and April 2012, **15,000 subjects from Mainz, Ingelheim and Bingen** were included in this study which

aims at tackling the causes of heart attack. The Foundation will continue to monitor the developments of this project carefully, analyzing the results and we will regularly inform our members of the Friends Club and Board of Trustees of any important new result. **This year, on the 27 May, we have planned the first Gutenberg Health Study golf tournament.** All proceedings will be donated to GHS.

On the occasion of our **5-year anniversary in December, the artist Rosi Roehm presented us one of her sculptures**, representing the torso of a woman's body. Like for Udo's painting, this auction was also a success, with a number of generous bids.

On behalf of the Board of the Foundation Heart of Mainz and the Board of Trustees, I want to thank all of our sponsors for the outstanding support over the last five years, and express the hope that you remain on our side and continue to support us in the fight against cardiovascular disease.

This year, we have been honored to welcome Cardinal Karl Lehmann as an honorary Board member of our Foundation.

In order to make our projects possible, we still need the your financial assistance: as a donation for specific projects, or in the form of a membership.

Finally, probably the best news: the Department of Medicine 2 of the university of Mainz was ranked 12th among the top 15 cardiology departments in Germany according to the survey "Germany's Best Hospitals" of the magazine FOCUS.

This success has been achieved also through the support of the foundation for our clinic.

With warm regards

Yours,

Thomas Münzel

I want to start this year with two of the highlights for our foundation.

The first is that **Cardinal Karl Lehmann**, Bishop of Mainz and former Chairman of the Conference of the German Bishops, honored us by accepting to **become member of the Board**. The second, that our **Department of Medicine 2**, which is 100% supported by our Foundation, was ranked **12th among the top 15 cardiology departments in Germany according to the survey "Germany's Best Hospitals" of the magazine FOCUS**.

Cardinal Karl Lehmann is honorary Board member

In receiving the Certificate of Honour from the Foundation Heart of Mainz, Cardinal Karl Lehmann said: "If I can do something for the others, I will do anything that is in my possibilities".

Cardinal Lehmann also agreed to become emeritus member of the Board of Trustees togeher with Emeritus Professor Paul Schölmerich.

By means of the annual report Professor Münzel informed the Cardinal of the aims of the Foundation Heart of Mainz.

#12 in FOCUS-Ranking for our cardiology – result of our efforts

We are proud of being #12, regarding the fierce competition in the cardiology sector – a reward for years of ongoing efforts. A very special thank you goes to our staff.

FOCUS is a German weekly news magazine, publishing a ranking of German clinics every year. For their evaluation, they use three ways of research:

1) survey among doctors

2) detailed analysis of quality records

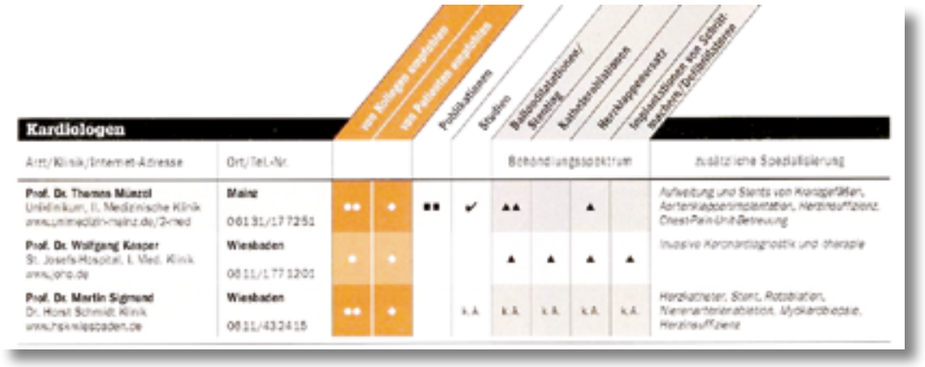
3) questionnaires for the clinics.

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

We are very pleased about the appreciation of our special management of admission and discharge – a sector in which we have invested for years - which optimizes the processes for inpatients.

In the category of cardiologic specialist, Professor Münzel also achieved a very good ranking.

Recommendations of colleagues and patients, publications and studies were considered, also the clinic performances such as balloon dilatation, stents and implantation of cardiac valves. .



Kardiologen

Arzt/Klinik/Internet-Adresse	Ort/Tel.-Nr.	von Kollegen empfohlen	von Patienten empfohlen	Publikationen	Studien	Ballondilatationen/ Stenting	Katheterablationen	Herzklappenersatz	Implantationen von Schrittmachern/ Defibrillatoren	Behandlungsspektrum	zusätzliche Spezialisierung
Prof. Dr. Thomas Münzel Unikliniken, II. Medizinische Klinik www.unimedizin-mainz.de/2-med	**Mainz** 06131/177251	●●	●	■■	✔	▲▲		▲		Aufweitung und Stents von Koronargefäßen, Aortenklappenimplantation, Herzinsuffizienz, Chest-Pain-Unit-Betreuung	
Prof. Dr. Wolfgang Kasper St. Josefs-Hospital, I. Med. Klinik www.gno.de	**Wiesbaden** 0611/1771201	●	●			▲	▲	▲	▲	Invasive Koronardiagnostik und -therapie	
Prof. Dr. Martin Sigmund Dr. Horst Schmidt Klinik www.hsk-wiesbaden.de	**Wiesbaden** 0611/4324115	●●	●		k.A.	k.A.	k.A.	k.A.	k.A.	Herzkatheter, Stent, Rotablation, Nierenarterienablation, Mykardbiopsie, Herzinsuffizienz	

Top 25 DEUTSCHLAND

Fachbereich/Indikation: FOCUS-Klinikscore | Patientenzufriedenheit¹ | Alzheimer | Angst | Brustkrebs | Darmkrebs | Depression | Risikogeburten | Herzchirurgie | **Kardiologie** | Lungenkrebs | Multiple Sklerose | Orthopädie | Parkinson | Prostatakrebs | Zwang

Platz im bundesweiten Indikationen-Ranking: ■ 1. Platz ■ 2./3. Platz ■ 4. bis 10. Platz

	Krankenhaus	Ort/Tel.-Nr.																	
1	Charité Universitäts-medizin Berlin	Berlin 030/45050	1226	74	18	29	29	5	12	1	42	22		7	1	7	4	
2	Klinikum der Ludwig-Maximilians-Universität	München 089/70950	999	78	25	34	43	3	13	4		6	8	23	53		14	7
3	Universitätsklinikum Carl Gustav Carus	Dresden 0351/4580	867	77	9	17	77	4	5	40				4	16	2	2	18
4	Universitätsklinikum Freiburg	Freiburg 0761/2700	845	78	5	6	2	38	1	23	15	83	4	33	76	35	86	4
5	Universitätsklinikum Heidelberg	Heidelberg 06221/560	730	79		27	9	1	6	33	7	7		16	12		10	9
6	Klinikum rechts der Isar der TU München	München 089/41400	726	79	14		22	14	30	6		48		3	44	15	1	
7	Klinikum der Joh. Wolfg. Goethe-Universität	Frankfurt a. Main 069/63010	717	74	15	11	10	17	47	18	26	11		18		9	15	
8	**Universitätsmedizin d. J. Gutenberg-Univ. Mainz**	**Mainz** 06131/170	691	78	7	8	5	9	14		32	12		6			8	
9	Universitätsklinikum Hamburg-Eppendorf	Hamburg 040/74100	670	77	34	15	26	20	29	8				28	80	26		14
10	U… B…																	
11	U… E…																	
12	U… W…																	
13	U… C…																	
14	U… G…																	
15	U… A…																	
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17	U… G…																	
18	U…																	
19	U… d…																	
20	K…																	
21	U… M…																	
22	U…																	
23	U… D…																	
24	U…																	
25	U… L…																	

Quelle: Munich Inquire Media für FOCUS 2012

FOCUS 22…

Top 15 | Kardiologie

FOCUS-Klinikscore² | Reputation | medizinische Qualität¹ | Hygienestandard | Pflegequalität¹ | Patientenzufriedenheit¹

	Abteilung/Krankenhaus	Ort/Tel.-Nr.	Punktvergabe					Besonderheiten
1	**Klinik für Kardiologie und Angiologie** Universitäts-Herzzentrum Freiburg Bad Krozingen	**Bad Krozingen** 07633/4020	85	■■■	82	◆◆	84	85	
2	**Kardiologie** Kerckhoff-Klinik	**Bad Nauheim** 06032/996202	78	■■■	88	◆◆	36	78	*Kardio-CT, Kardio-MR², Hybrid-OP, alle kardiologischen Eingriffsarten*
3	**Klinik für Herz- und Kreislauferkrankungen** Dt. Herzzentrum München – Klinik a.d. TU München	**München** 089/12184073	78	■■■	65	◆◆	83	83	*transfemoraler Aortenklappen-ersatz/Mitralclipping*
4	**Klinik für Kardiologie** Herzzentrum Leipzig – Universitätsklinik	**Leipzig** 0341/8651428	78	■■■	50	◆◆	85	78	*drei hochmoderne, biplane Herzkatheteranlagen*
5	**Kardiologie** Robert-Bosch-Krankenhaus	**Stuttgart** 0711/81013456	70	■■■	58	◆	82	83	*Hybrid-OP, Ultraschallgeräte für operative Diagnostik*
6	**Medizinische Klinik und Poliklinik I – Großhadern** Klinikum der Ludwig-Maximilians-Universität München	**München** 089/70952371	70	■■■	49	◆	88	78	*Chest Pain Unit zur Versorgung der Patienten mit akutem Herzinfarkt*
7	**Innere Medizin III: Kardiol., Angiol. und Pneumologie** Universitätsklinikum Heidelberg	**Heidelberg** 06221/568670	69	■■■	56	◆	11	79	*Universitäres Herzzentrum, Zentrum für Herzinsuffizienz*
8	**Klinik für Kardiologie, Pneumologie und Angiologie** Universitätsklinikum Düsseldorf	**Düsseldorf** 0211/8118801	69	■■■	67	◆◆	83	75	*3-D-Hybrid-Imaging-Suit (CT, MR², 3-D-Echokardiografie)*
9	**Inn. Med. – Kardiol., Angiol., Pneum., intern. Intens.-Med.** Universitätsklinikum Jena	**Jena** 03641/9324101	69	■■■	74	◆	56	75	*Zentrum für schwergradiges Asthma bronchiale*
10	**Inn. Med. – Kardiol., Angiol. u. intern. Intens.-Med.** Universitätsklinikum des Saarlandes	**Homburg/Saar** 06841/1623372	69	■■■	65	◆	82	78	*Therapiemanagement bei therapieresistenter Hypertonie*
11	**Mediz. Kl. III: Kardiol., Angiol./Hämol., Nephrologie** Kl. d. Joh. Wolfgang Goethe-Univ. Frankfurt am Main	**Frankfurt am Main** 069/63015789	68	■■■	73	◆◆	68	74	*Zelltherapie bei Herzschwäche, Aortenklappen-Implantation*
12	**II. Medizinische Klinik und Poliklinik** Univ.-Med. der Johannes Gutenberg-Universität Mainz	**Mainz** 06131/177251	68	■■	65	◆◆	88	78	*spezielles Aufnahme- und Entlassungsmanagement*
13	**Klinik und Poliklinik für Innere Medizin B** Universitätsmedizin Greifswald	**Greifswald** 03834/8680500	67	■■■	65	◆◆	80	75	*modernste Intensivstation mit Organersatzverfahren*
14	**Med. Kl. II – Kardiologie, Angiologie, Intensivmedizin** Universitätsklinikum Schleswig-Holstein, Campus Lübeck	**Lübeck** 0451/5002501	67	■■■	65	◆	83	77	*Chest Pain Unit, transfemoraler Aortenklappenersatz*
15	**Klinik f. Kardiologie u. Internistische Intensivmedizin** Städtisches Klinikum Bogenhausen	**München** 089/92702071	66	■■	66	◆◆	75	77	*komplexe kardiovaskuläre Diagnostik und Therapie*

Quelle: Munich Inquire Media für FOCUS 2012

1 : Höchstpunktzahl 100; Reputation: ■ = empfohlen; ■■ = häufig empfohlen; ■■■ = überdurchschnittlich häufig empfohlen; Hygiene: ◆ = durchschnittl.; ◆◆ = überdurchschnittl.; k.A. = keine Angabe

2 : MR = Magnetresonanz/Kernspin

Continuous innovations in the field of cardiology.

Starting in 2013, we want to publish a monthly newsletter in which the most important studies are presented in an understandable way, and put in the perspective of their impact for our patients. This newsletter and the presentations at the events "the Foundation Heart of Mainz informs" will be made available to members, friends and the Board of Trustees in an exclusive area of our website. We will inform you about this in a separate letter.

First, however, some publications that have made headlines in the years 2012 and 2013, and that may have a direct influence on our lifestyle:

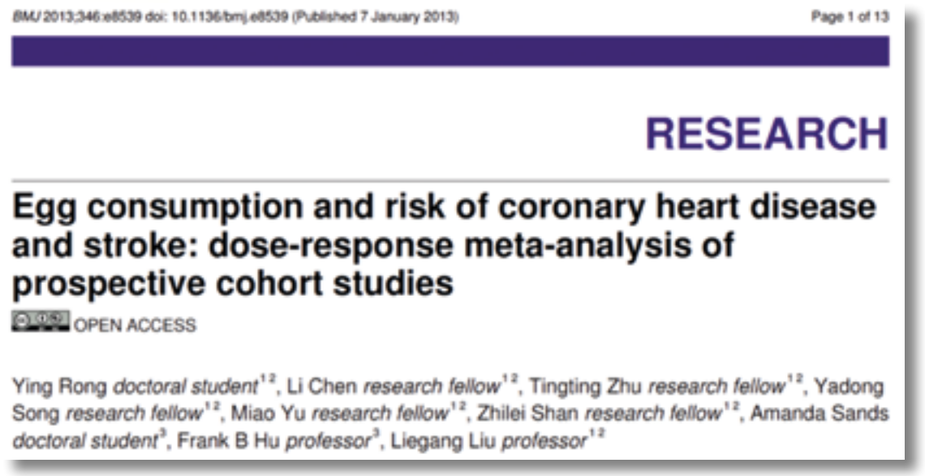
An egg a day does not hurt you!

It has long been discussed whether eating an egg a day (a typical German and Anglo-saxon tradition but far from the "healthy mediterranean diet") might promote the development of heart disease due to an adverse effect on blood fats and cholesterol.

Over 260,000 patients were included in the analysis. Subjects were followed up for between eight and 20 years. The data clearly show that an egg a day does not increase the risk of coronary heart disease.

Interesting and controversial data were however observed in patients with diabetis: here, a daily egg lead to an increase of coronary heart disease, but also to a reduction of stroke.

How these observations are to be explained, however, is still unclear.



BMJ 2013;346:e8539 doi: 10.1136/bmj.e8539 (Published 7 January 2013) Page 1 of 13

RESEARCH

Egg consumption and risk of coronary heart disease and stroke: dose-response meta-analysis of prospective cohort studies

OPEN ACCESS

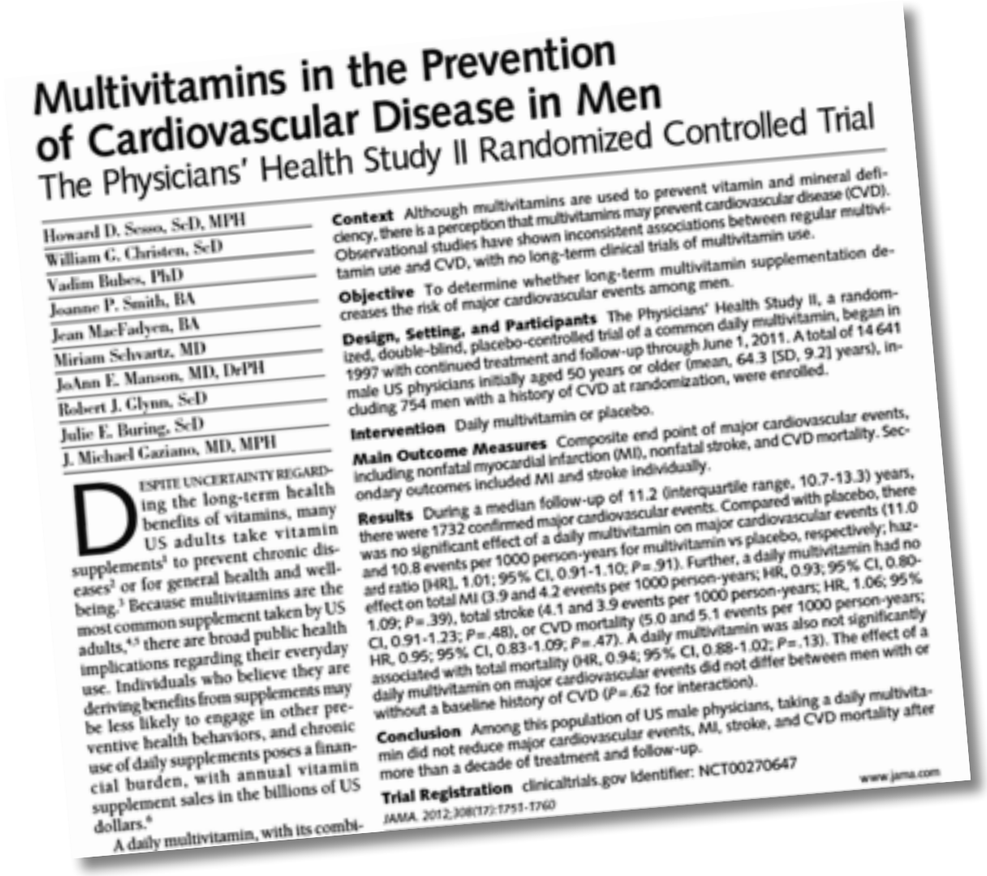
Ying Rong *doctoral student*[1 2], Li Chen *research fellow*[1 2], Tingting Zhu *research fellow*[1 2], Yadong Song *research fellow*[1 2], Miao Yu *research fellow*[1 2], Zhilei Shan *research fellow*[1 2], Amanda Sands *doctoral student*[3], Frank B Hu *professor*[3], Liegang Liu *professor*[1 2]

Yet more evidence: Taking multivitamin tablets does not improve life expectancy, but costs money!

This study published recently, in fall 2012, confirms once again that taking vitamins is not a good idea.

In this study, a total of 15,000 male doctors received a multi-vitamin pill consisting of vitamin E (400 IU), vitamin C treatment (500 mg) and beta carotene for a period of 11.2 years.

The results showed clearly that the treatment with vitamins in this primarily healthy collective doctor was not able to prevent the onset of heart attack and stroke.



Multivitamins in the Prevention of Cardiovascular Disease in Men
The Physicians' Health Study II Randomized Controlled Trial

Howard D. Sesso, ScD, MPH
William G. Christen, ScD
Vadim Bubes, PhD
Joanne P. Smith, BA
Jean MacFadyen, BA
Miriam Schvartz, MD
JoAnn E. Manson, MD, DrPH
Robert J. Glynn, ScD
Julie E. Buring, ScD
J. Michael Gaziano, MD, MPH

DESPITE UNCERTAINTY REGARDing the long-term health benefits of vitamins, many US adults take vitamin supplements[2] to prevent chronic diseases[3] or for general health and well-being.[3] Because multivitamins are the most common supplement taken by US adults,[4,5] there are broad public health implications regarding their everyday use. Individuals who believe they are deriving benefits from supplements may be less likely to engage in other preventive health behaviors, and chronic use of daily supplements poses a financial burden, with annual vitamin supplement sales in the billions of US dollars.[6]

A daily multivitamin, with its combi-

Context Although multivitamins are used to prevent vitamin and mineral deficiency, there is a perception that multivitamins may prevent cardiovascular disease (CVD). Observational studies have shown inconsistent associations between regular multivitamin use and CVD, with no long-term clinical trials of multivitamin use.

Objective To determine whether long-term multivitamin supplementation decreases the risk of major cardiovascular events among men.

Design, Setting, and Participants The Physicians' Health Study II, a randomized, double-blind, placebo-controlled trial of a common daily multivitamin, began in 1997 with continued treatment and follow-up through June 1, 2011. A total of 14 641 male US physicians initially aged 50 years or older (mean, 64.3 [SD, 9.2] years), including 754 men with a history of CVD at randomization, were enrolled.

Intervention Daily multivitamin or placebo.

Main Outcome Measures Composite end point of major cardiovascular events, including nonfatal myocardial infarction (MI), nonfatal stroke, and CVD mortality. Secondary outcomes included MI and stroke individually.

Results During a median follow-up of 11.2 (interquartile range, 10.7-13.3) years, there were 1732 confirmed major cardiovascular events. Compared with placebo, there was no significant effect of a daily multivitamin on major cardiovascular events (11.0 and 10.8 events per 1000 person-years for multivitamin vs placebo, respectively; hazard ratio [HR], 1.01; 95% CI, 0.91-1.10; $P = .91$). Further, a daily multivitamin had no effect on total MI (3.9 and 4.2 events per 1000 person-years; HR, 0.93; 95% CI, 0.80-1.09; $P = .39$), total stroke (4.1 and 3.9 events per 1000 person-years; HR, 1.06; 95% CI, 0.91-1.23; $P = .48$), or CVD mortality (5.0 and 5.1 events per 1000 person-years; HR, 0.95; 95% CI, 0.83-1.09; $P = .47$). A daily multivitamin was also not significantly associated with total mortality (HR, 0.94; 95% CI, 0.88-1.02; $P = .13$). The effect of a daily multivitamin on major cardiovascular events did not differ between men with or without a baseline history of CVD ($P = .62$ for interaction).

Conclusion Among this population of US male physicians, taking a daily multivitamin did not reduce major cardiovascular events, MI, stroke, and CVD mortality after more than a decade of treatment and follow-up.

Trial Registration clinicaltrials.gov Identifier: NCT00270647

JAMA. 2012;308(17):1751-1760 www.jama.com

Is there a vitamin that may help? Less Vitamin D and heart attacks?

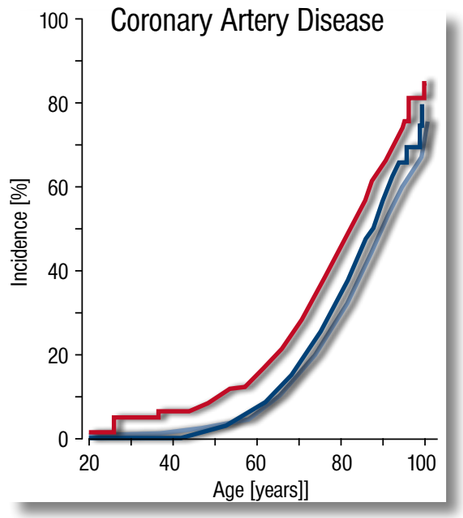
25-Hydroxyvitamin D Levels and Risk of Ischemic Heart Disease, Myocardial Infarction, and Early Death
Population-Based Study and Meta-Analyses of 18 and 17 Studies

Peter Brøndum-Jacobsen, Marianne Benn, Gorm B. Jensen, Børge G. Nordestgaard

This study examined whether reduced blood levels of vitamin D are associated with an increased risk of heart attack, coronary heart disease and death. The analysis included data from the Copenhagen Heart Study and a meta-analysis of an additional 18 studies. The data show quite clearly that the lower the vitamin D levels, the higher the probability of dying from heart attacks (see figure below).

The hypothesis here is that genes associated with low Vitamin D might also cause abnormalities that lead to a significant increase in the risk of heart attack. There is also evidence that low physical activity will lead to lower levels of vitamin D, and this in turn to the increased risk of coronary heart disease.

This observation must be confirmed in a prospective study, before it can be concluded that the administration of vitamin D supplements has beneficial effects.



Patients with lower vitamin D levels have a higher risk of coronary artery disease, heart attack and a lower life expectancy.

Does digitalis increase mortality among patients with atrial fibrillation?

European Heart Journal
doi:10.1093/eurheartj/ehs348

CLINICAL RESEARCH

Increased mortality among patients taking digoxin-analysis from the AFFIRM study

Matthew G. Whitbeck, Richard J. Charnigo, Paul Khairy, Khaled Ziada, Alison L. Bailey, Milagros M. Zegarra, Jignesh Shah, Gustavo Morales, Tracy Macaulay, Vincent L. Sorrell, Charles L. Campbell, John Gurley, Paul Anaya, Hafez Nasr, Rong Bai, Luigi Di Biase, David C. Booth, Guillaume Jondeau, Andrea Natale, Denis Roy, Susan Smyth, David J. Moliterno, and Claude S. Elayi*

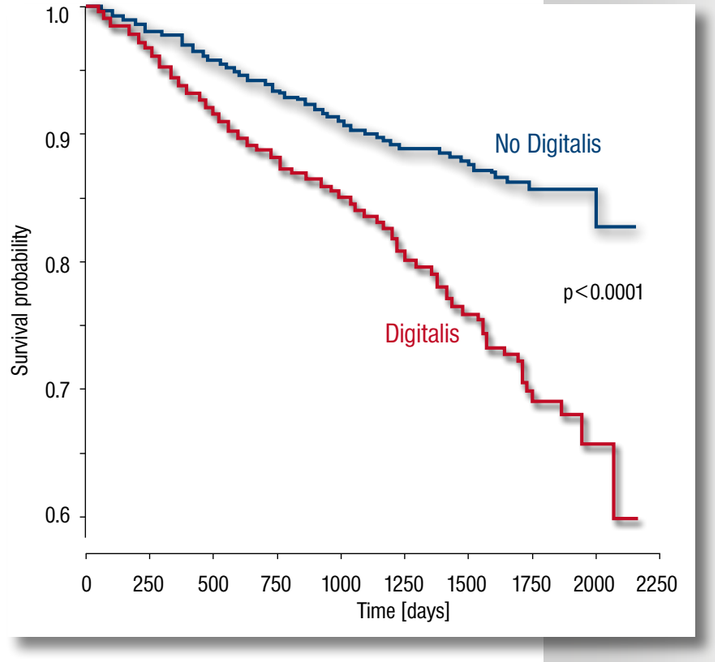
A new study raises concerns about the treatment with digoxin for rate control in atrial fibrillation. As suggested in several studies, digitalis leads to excess mortality.

Patients who have atrial fibrillation and have trouble breathing are often prescribed digitalis because this symptom may be due to a weak heart. For many years, Germany was described as the "World Champion in prescribing digitalis." This has fundamentally changed when it was found that there are different forms of heart failure, namely the so-called systolic and diastolic forms. In patients with diastolic heart failure (a condition where the heart becomes stiffer and is unable to relax efficiently, digitalis is contra-indicated as it may even worsen the symptoms of heart failure. If anything, digitalis may reduce the number of hospitalizations, but by no means does it change the life expectancy. Some of the studies even revealed that digitalis might actually cause more deaths than it can actually save lives.

Another range of indications of digitalis is atrial fibrillation, as this drug is able to slow down the heart rate when it is too fast. In the so-called AFFIRM trial, nearly 70% of patients with atrial fibrillation received treatment with digoxin, a digitalis compound. The results of this study clearly show that this type of therapy leads to an approximately 40% increase in overall mortality.

This means an additional fatality in five years for every six patients treated with digitalis. Moreover, the analysis showed a higher rate of cardiovascular death by 35% and an increased risk of arrhythmias by 61% in patients treated with the cardiac glycoside.

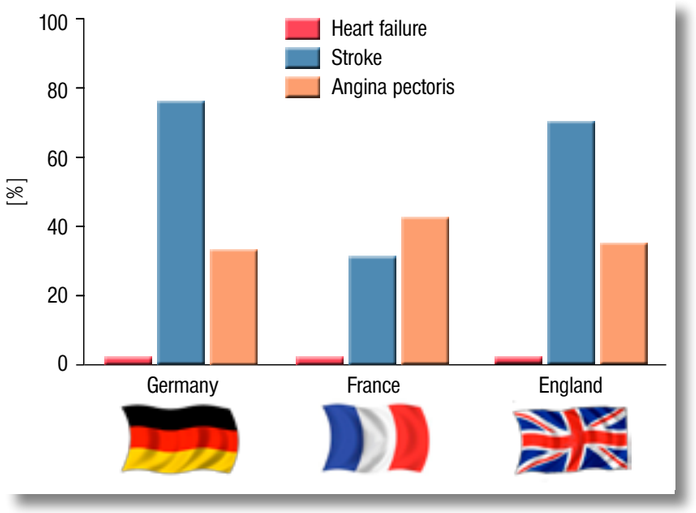
Comment: The use of digitalis in Mainz declined dramatically in recent years and is now only used in patients with severe heart failure and rapid pulse during atrial fibrillation when no other therapy is possible.



Focus on heart failure

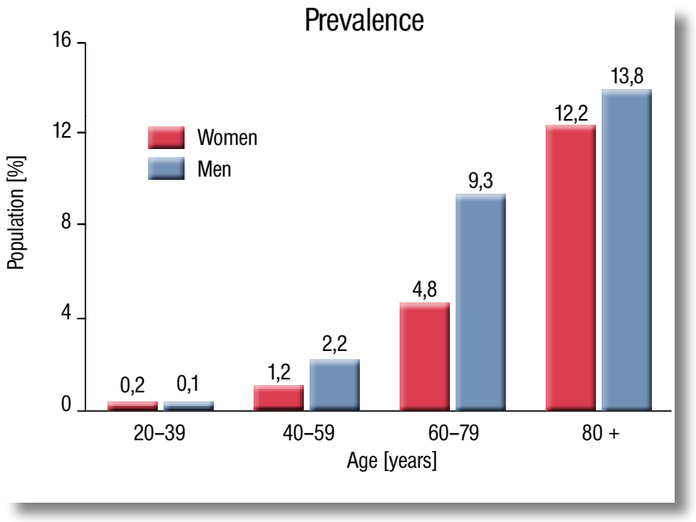
In the first section, I will briefly highlight the growing importance of heart failure. At present, nearly 2 million people in Germany have this disease and its importance has increased dramatically in recent years.

One of the main reasons that brings us to deal with this disease is that, as new analyzes show, patients know very little of this disease, which obviously leads to delays in the diagnosis and the initiation of an adequate therapy. Only about 35% of the adults know what the symptoms of this disease are and how to respond to it.



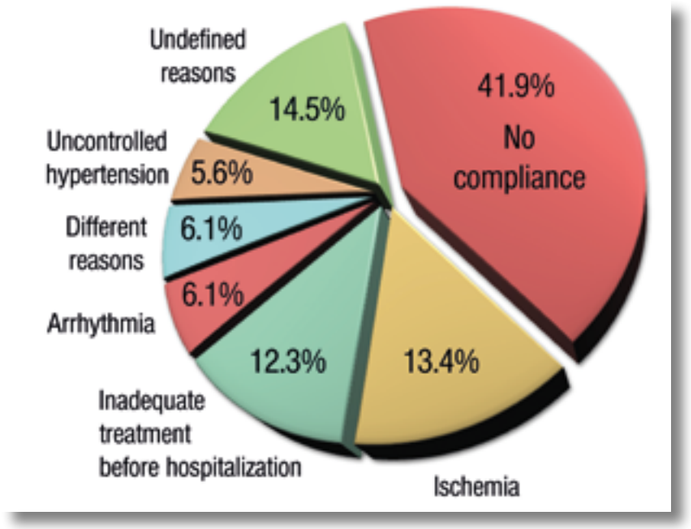
Knowledge of patients about the typical symptoms of heart failure, stroke and angina. One sees that the knowledge of coronary heart disease and stroke is clearly better than for heart failure.

Heart failure is primarily a disease of the elderly. The incidence of this disease is as low as 1% in the 5th decade of life, and only 3% in the 6th decade, but it raises to more than 10% for patients about 75 years of age.



Incidence of heart failure as a factor of age. Well over 10% of patients over 80 years develop heart disease.

This shows quite clearly that heart failure is primarily a disease of older and weaker patients. It is the most common diagnosis of all patients who are aged> 65 years in the emergency room, and 40% of the patients with this disease require at least one hospitalization per year.



The most common cause of hospitalization in patients with heart failure is a lack of compliance, i.e. a lack of willingness to pursue, on a daily basis and consistently, the physicians' recommendation for non-pharmacological and pharmacological treatment.

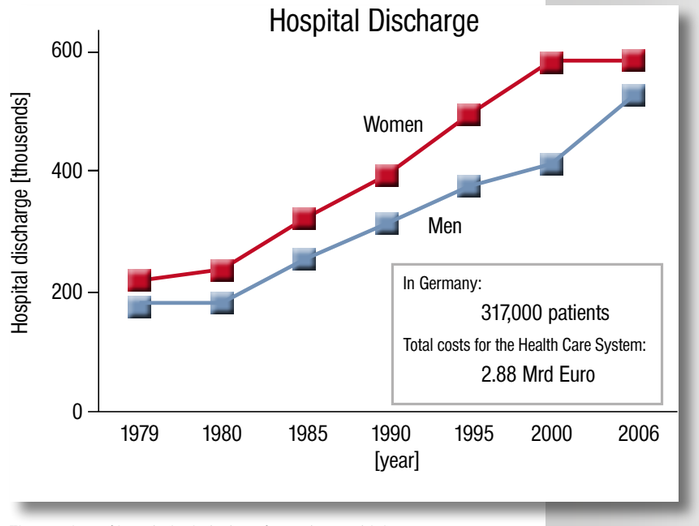
It is interesting to consider the reasons for the frequent hospitalizations – the pie chart above shows that a lack of compliance (for instance, the patient omits or forgets to take the medications) is the main cause for hospital admissions in more than 40% of the cases. This is the main reason for us to focus on this issue, we need to work on an alliance between patient and physician. The patients deserve to be explained and understand the importance of taking their medications, and forgetting just one dose might result into a problem.

Other important factors of worsening for this disease include heart problems by ischemia (ischemia), with only 12% of an inadequate drug therapy, and in 6% of cases, serious cardiac arrhythmias lead to hospitalization due to heart failure.

Beyond being a problem for the patient, the frequent hospital admissions are also a high cost for the society.

The annual costs for the hospital care of patients with heart failure reach 3 billion euros, which means that all drug or instrumental therapies that lead to a reduction in the number of inpatient admissions will contribute to a drastic reduction in the cost of this disease.

Worldwide, more than 15 million patients with heart failure are treated, and each year, the number of these patients grows by 2 millions.



The number of hospital admissions for patients with heart failure is increasing significantly.

Definition of heart failure

The term heart failure refers to the inability of the heart to provide enough blood to sustain the rest of the body. Because during exercise our muscles need more oxygen, this condition is associated with decreased exercise capacity.

How can you quantify the severity of heart failure, clinically?

The so-called NYHA classification (NYHA stands for **N**ew **Y**ork **H**eart **A**ssociation classification) is a simple but clinically very useful method to classify the severity of the disease.

Normal	• No symptoms • Normal left ventricular function • Normal exercise capacity
NYHA I	• No symptoms • Reduced left ventricular function • Normal exercise capacity
NYHA II	• Reduced left ventricular function • Dyspnoe during heavy exercise
NYHA III	• Reduced left ventricular function • Dyspnoe during light exercise
NYHA IV	• Dyspnoe at rest • Reduced left ventricular function

Classification of heart failure based on to the severity of the symptoms (mostly shortness of breath).

It is particularly important to diagnose the disease as soon as possible, i.e. in a NYHA class I stadium. Although these patients do not have limiting symptoms, their life expectancy is limited, and they must therefore be examined at regular intervals. In this stadium, the possibility that therapies might have success is also much higher.

Classification of heart failure:

There are several ways to describe and classify heart failure. One is based on whether the right, the left or both ventricles are involved. If both heart chambers are concerned, we speak of a bi-ventricular heart failure.

Other classifications are based on the duration (acute or chronic heart failure), on the severity of the dysfunction and on the pathophysiology (the mechanism of the disease).

It is particularly interesting that, until very recently, we only thought of heart failure as of a disease associated with impaired systolic pump function of the heart (the heart's ability to contract). Today, primarily due to the development of cardiac ultrasounds, we know in about 50% of all patients with heart failure, the systolic pump function of the heart can be quite normal, and that the symptoms are caused by an impaired relaxation of the heart (diastolic form of heart failure).

What conditions can lead to the development of heart failure?

In up to 70% of the cases, a heart attack is the cause for the pump dysfunction and the heart failure.

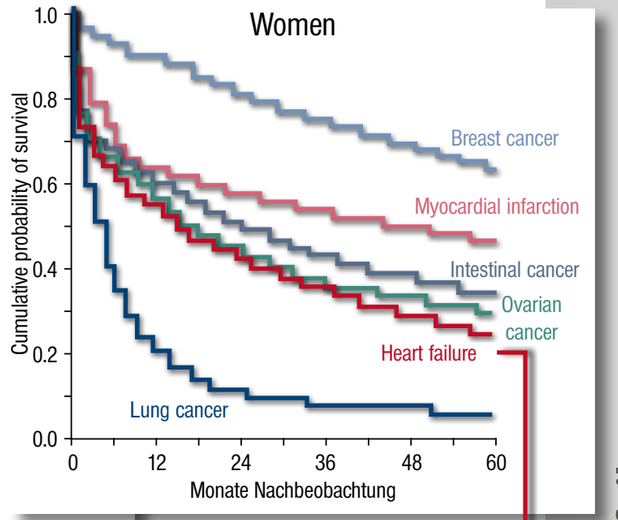
Additional causes may lie in an inflammation of the heart, in defective heart valves, drug therapy or alcohol abuse, congenital heart disease or heart rhythm problems.

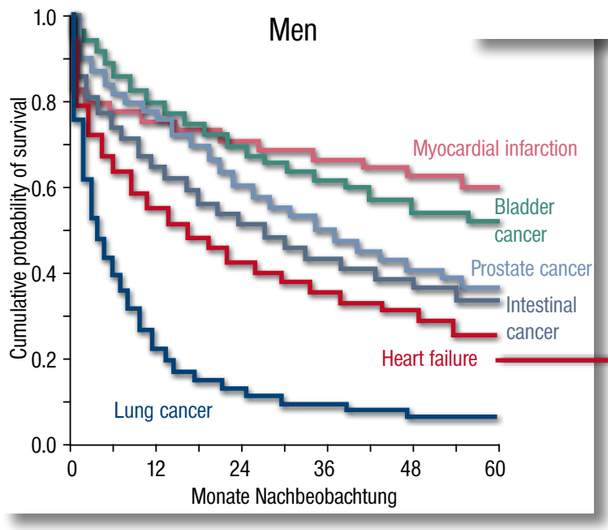
The fact that cardiac arrhythmias, and here primarily atrial fibrillation, can cause heart failure, was also certainly one of the most important clinical findings in this field. This means that if one is able to correct the arrhythmia completely, the patient may then hope for an improvement in the symptoms, quality of life, and life expectancy.

What is my life expectancy if I have a weak heart?

When one speaks of a short life expectancy, one thinks automatically of cancer. The figure below clearly shows that, in both men and women, heart failure has a comparably serious prognosis.

Five years after the diagnosis of heart failure, 50% of the patients affected are expected to die. Thus, heart failure has a lower life expectancy than breast cancer, heart attack, colon and ovarian cancer in women and it has a poorer prognosis than heart attacks, bladder, prostate, and colon cancer in men.





- > 50% of the patients with heart failure die within 5 years of the first diagnosis.
- The mean survival from the first hospitalization is 16 months.

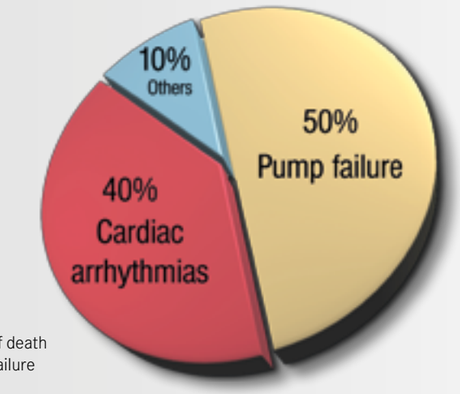
Focus on heart failure

Of what will I die, if I have a weak heart?

Here, too, there are reliable figures. Approximately half of all patients die of pump failure and at least 40% of fatal cardiac arrhythmias.

This also explains why the implantation of a defibrillator, for example those that can effectively terminate cardiac fibrillation, is able to improve the life expectancy of patients with severe heart failure significantly (see also Chapter defibrillators on page 22).

The 1-year mortality of patients with a NYHA I class heart failure is also at least 5%. These are, as mentioned, patients who have no symptoms at all, but who nonetheless have an impaired pump function when examined with a cardiac ultrasound examination. Therefore these patients need to be diagnosed early and a treatment with medications, e.g. with ACE inhibitors or AT1-blockers needs to be initiated to improve their prognosis.



Causes of death
in heart failure

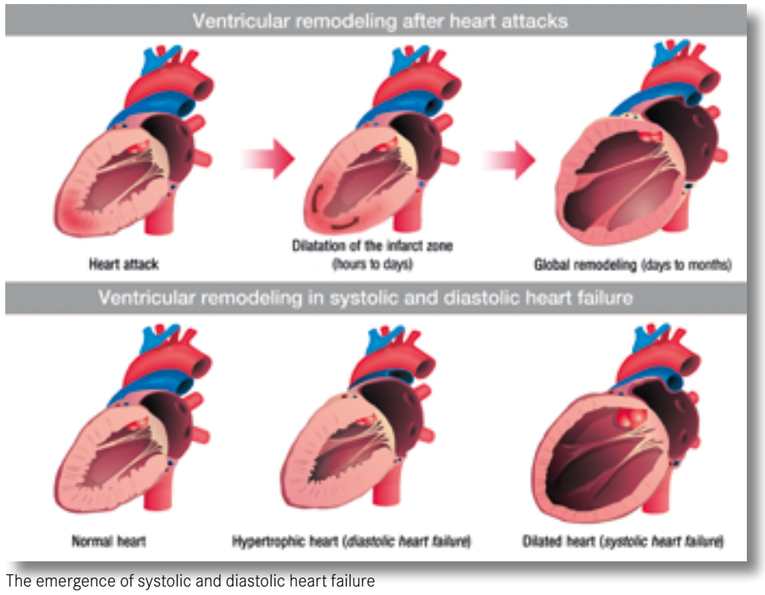
Pathophysiology of heart failure

According to Wikipedia, pathophysiology is a ”pathological physiology“, which sets out the conceptual components of pathology and physiology together. “Pathology“ is the study of diseases, while “physiology“ studies the mechanisms of the functioning of the body (Greek physis) of a living being.

As mentioned above, there are two forms of heart failure: systolic and diastolic.

Both are illustrated in the figure below. The top panel describes systolic heart failure. Within hours to days after a heart attack, an expansion of the infarct scar occurs. This means that after the loss of the heart muscle caused by the heart attack, the remaining areas have to compensate and are therefore burdened to the extreme. If drugs that relieve the congested areas of the heart are not administered, a global remodeling of the left ventricle occurs and the pumping function of the whole heart will deteriorate.

The form of diastolic heart failure usually arises in patients with hypertension. The high pressure load increases the stress on the walls of the heart, which react with a thickening. This leads to a failure of their capacity to relax resulting in a backflow of blood in the pulmonary vessels. Especially in physical stress, this then leads to symptoms of shortness of breath. If for example blood pressure cannot be adjusted, ultimately a form of systolic heart failure may develop (systolic heart failure).



The emergence of systolic and diastolic heart failure

Symptoms of patients with heart failure

It is interesting to ask patients what their principal complaints regarding their quality of life are. For example, do they feel limited by their shortness of breath or by the weakness of their muscles?

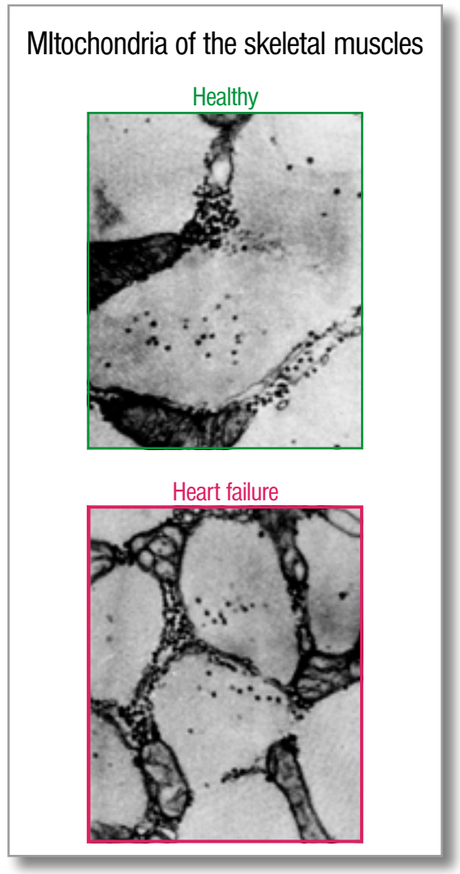
One would expect that the majority of patients would indicate dyspnea, or shortness of breath, as their biggest issue.

Surprisingly, this is not the case. Often, the dominant symptom is the rapid exhaustion of the muscles. Scientific studies have provided convincing evidence that the power plants of the cell, the mitochondria, are simply smaller in heart failure patients which reflects a reduced supply of energy, e.g. in skeletal muscle. Thus, the leg muscles get sooner tired and their performance decreases significantly.

These changes in the skeletal muscles are virtually identical to those that can be observed in patients who have been immobilized for prolonged periods, for instance after a bone fracture. When they cannot train, the muscles decrease progressively in volume (called atrophy).

This also means that regular physical training is important for heart failure patients (even those with significantly reduced pumping function of the heart). With exercise, the muscular performance is stimulated again, and thus the rapid fatigability of patients may be counteracted.

The interesting thing is that with physical exercise both quality of life AND life expectancy also increase significantly.



Mitochondria in the skeletal muscles of heart failure patients are smaller.

The recipe for heart patients is therefore, unlike 30 years ago, not to rest too much, but to remain fit through regular exercise.

What are other symptoms of patients with heart failure?

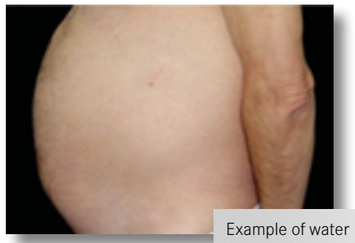
The classical symptom of patients with heart failure is shortness of breath, and this especially in patients in whom the left ventricle is significantly damaged (left ventricular failure, see figure). It is important to ask the patient whether he can lie or sleep on a flat bed, or if he has to put several pillows under the head. A sign of heart failure are also frequent nocturnal urination (nicturia), swollen neck veins when sitting, signs of severe bronchitis and especially fatigue.

A patient with heart failure and acute respiratory distress.

A patient with heart failure and fluid retention in the legs vein and liver.

Patients who have a dysfunction of the right heart have principally a problem with retention of fluids, which leads to congestion of the liver. The liver is larger than normal, tender, digestion is impaired, and fluid accumulates in the legs and abdomen.

Examples of swollen neck veins



Example of water in the abdomen

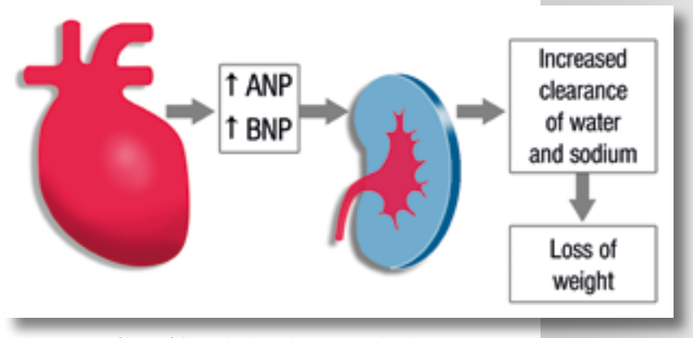
The patient can always keep the degree of water retention by a daily weight control. A weight gain of several pounds without explanation almost always speaks for water retention.

Diagnosis of heart failure

To make a diagnosis of heart failure, we need to perform a physical examination of the patient, take a blood sample, write an ECG, perform a cardiac ultrasound, and finally a cardiac catheterization (accompanied often by a biopsy).

A blood marker is of special value, and all patients with heart failure hear this term sooner or later: this is "BNP". BNP stands for **Brain Natriuretic Peptide** (because it was first demonstrated in the brain). This is a hormone that helps the excretion of sodium (and therefore water, therefore it is called "natriuretic").

When the heart is overloaded, increased levels of this hormone help the patient lose more water and electrolytes, and thus reducing congestion. At the same time, an elevated blood BNP means that the heart failure is not compensated anymore, i.e. that fluid accumulates in the body: BNP can be measured in the emergency room in patients who have shortness of breath, allowing, when this marker is elevated, the diagnosis of heart failure.



In the context of heart failure, the heart becomes a gland and produces hormones such as atrial natriuretic hormone and the BNP, which leads to an increased loss of water through the kidneys and relieves the heart.

The hormone is produced in large quantities in the left ventricle. Normal levels are in the range <100 pg/ml and may increase in heart failure to values above 5000 pg / ml.

These values primarily reflect the efficiency of the heart, and may also help assess whether a therapy is successful.

What is the treatment of heart failure?

The goals of treatment of heart failure have changed significantly in recent decades. 30 – 40 years ago it was still important to improve cardiac performance with medication; today, the first issues we address are the following:

- What therapy will increase the patient's life expectancy?
- What therapy will improve his/her quality of life?

Improving pump function and cardiac output are nowadays considered to be only secondary outcomes.

In the treatment of heart failure, we distinguish general measures and drug therapy.

The non-pharmacological measures include:

1) Weight normalization
2) Limitation of salt in the diet
3) Limitation of fluid intake to a maximum of 2*l* / day, and 1–1.5 *l* / day in severe heart failure
4) Control of cardiovascular risk factors
5) Abstinence from alcohol:
   a. With men:
   < 30g/day: 0.5 *l* beer, 0.25 *l* wine
   b. In women:
   < 20g/day: 0.3 *l* beer, 0.2 *l* wine

Crucial for us in the first place is that patients measure their body weight daily. Patients must stand every morning on the scale to control that their weight has not changed. An increase of several kilograms in a short period speaks for acute heart failure, which must be immediately countered by medications (with the help of diuretics).

Drug therapy of heart failure

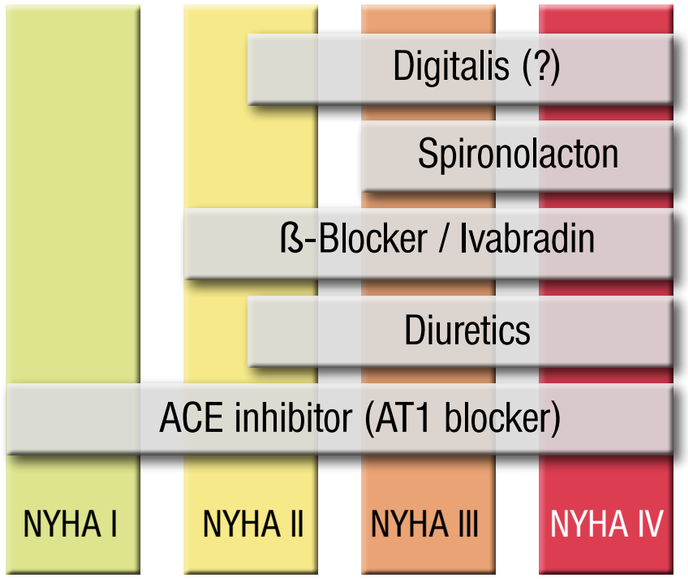
As can be seen from the scheme, the therapy of heart failure uses different classes of drugs based on the severity of the symptoms and the clinical conditions of the patient. Today, we usually begin with a very early therapy with an ACE inhibitor and an angiotensin receptor blocker (NYHA I). The use of digitalis is controversial and this drug is used only in patients with severe heart failure and rapid pulse during atrial fibrillation. For NYHA II patients, water resources are used; aldosterone and spironolactone are used in NYHA III and IV patients.

Therapies aimed at slowing the heart rate are particularly important in heart failure. About 15 years ago, the group of Professor Hasenfuss (University Clinic Göttingen) showed that the administration of glucose in the coronary artery slows the heart rate, improving the pump function of the heart. This observation strongly suggests that, in the context of heart failure, the heart itself is short of energy resources. The best way to save energy is therefore to make the heart beat slower.

There are today two pharmacological approaches in order to slow the heart rate: on the one hand, treatment with a beta-blocker such as metoprolol and carvedilol; on the other, the so-called If channel blocker ivabradine. This substance acts only on the sinus node, the structure responsible for the pulse generation, thereby reducing for the heart rate.

It is important to note that the guidelines for heart failure recommend that the optimum pulse rate should be at about 55–60 beats per minute.

Achieving this value using a combination therapy with a beta-blocker and ivabradine (Procoralan) leads within a few months to dramatic improvements in the pumping function of the heart due to the reduction of energy consumption.



Drug therapy of heart failure based on clinical severity

Resynchronization of the heart

Another way to improve the pumping function of the heart is with the so-called **resynchronisation therapy**. This therapy, which resembles to the implantation of a pace-maker, may be indicated for patients with a left bundle branch block.

The normal way in which the electric signals spread throughout the heart is depicted in the figure A).

The impulse is created in the sinus node, and is then transferred via the AV node to the right and left bundle branch. There are many patients with a so-called left bundle branch block (figure B).

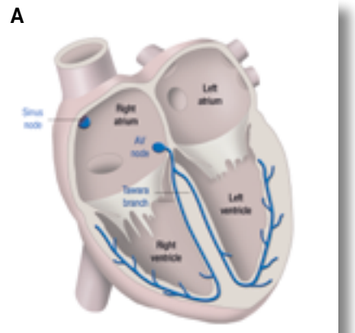
In these patients, the electrical impulses coming from the AV node do not spread synchronously to the two ventricles, because the pathway leading to the left one is blocked (figure C). The result is a “rocking motion“ of the heart caused by the fact that the right heart beats ahead of time.

We know that this eventually leads to a deterioration of the pumping function of the heart. By placing a pacemaker electrode in the coronary sinus (cardiac veins), we can now enable the side wall of the left heart to be stimulated by this electrode. If another electrode is placed in the right atrium, then both halves of the heart can be activated synchronously, thus preventing the rocking motion (figure D).

The result over time is a significant improvement in the pumping function of the heart and thus a better quality of life for the patient.

Principle of the resynchronization therapy

A



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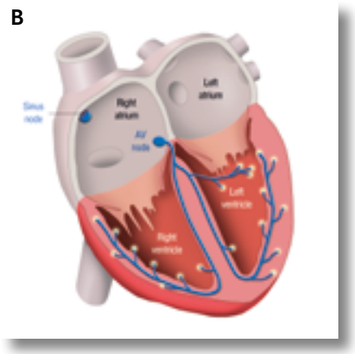

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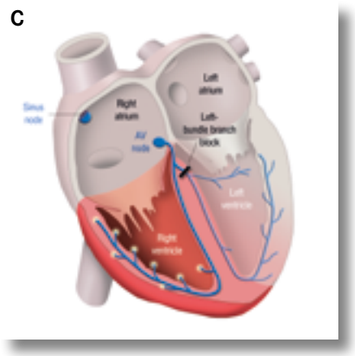

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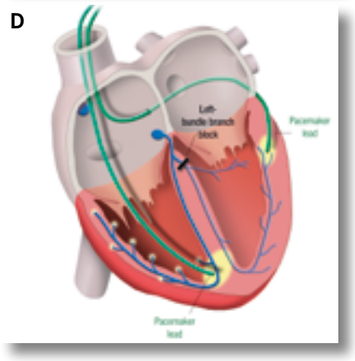
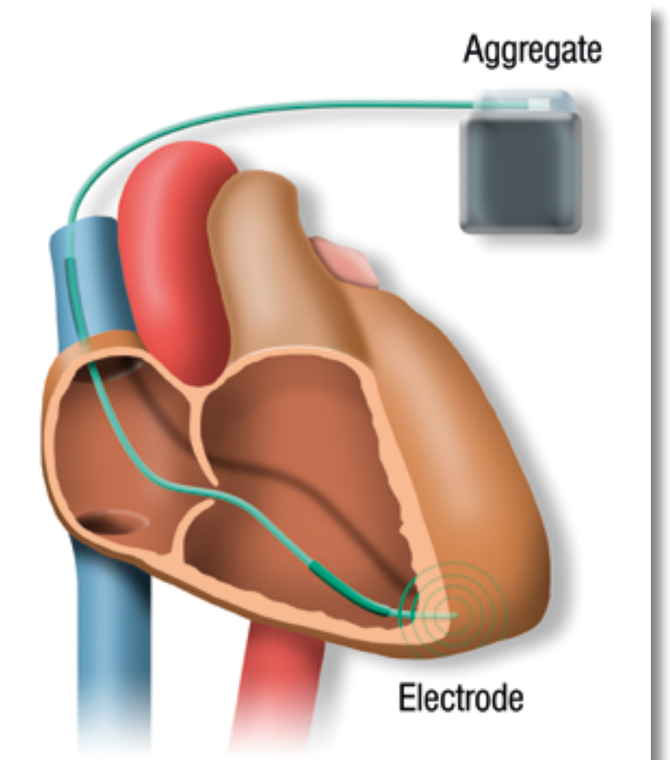


Defibrillator therapy

As mentioned above, heart rhythm disorders such as ventricular fibrillation are among the leading causes of death in patients with heart failure. We have now, however, the possibility of implanting devices that detect these cardiac arrhythmias and may also treat them by giving an electrical shock that stops this fibrillation. These devices, also called defibrillators, are commonly implanted in patients with significantly impaired pumping function when, under maximum therapy, the pumping function remains below 35%. This device also has the possibility to take over the pacemaker function, and can also combined with a resynchronization if the patients present a left bundle branch block.



A defibrillator

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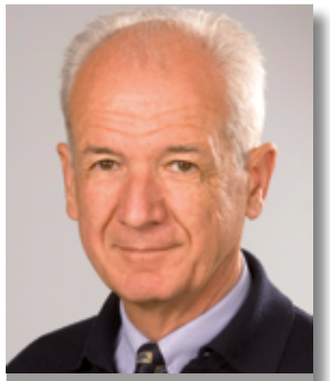

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*Source: Donors' Association for German Science

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- donation for the 70th birthday of Mrs Elke Leykauf
- donation of the Landfrauenverband Association Mainz-Koblenz
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- donation of the "Bohrservice Rhein Main" for a sculpture by Rosi Röhm

Birthday donations of Mr and Mrs Willy and Elke Leykauf

A reason to celebrate for Willy Leykauf and Elke Leykauf: Both celebrated a milestone anniversary in 2012. Instead of gifts, they both asked for donations to the Foundation Heart of Mainz.

Willy Leykauf, Professor Thomas Münzel, Elke Leykauf (left to right)

The Landfrauenverband Association of Mainz-Koblenz

The Landfrauenverband Association of Mainz-Koblenz supported the Foundation Heart of Mainz with a donation of Euro 1,000.00. The cheque was handed over by the Chairman of the District Association Christel Zimmermann during a visit to the University Medical Center Mainz on 23 May 2012. Professor Thomas Münzel, Director of the Department of Medicine 2 and member of the Board of Directors of the Foundation Heart of Mainz, thanked for their commitment. The Landfrauenverband Association organized, in cooperation with the radio channel SWR4 Rhineland-Palatinate, a Women's Day on the theme "Women's Health", in Kruft in the Eifel. Professor Thomas Münzel, Dr. Erik Hein from Polch, the SWR4 presenter Dr. Daniela Engelhardt and a patient held a panel discussion about different heart diseases in women. Professor Münzel talked about how different the symptoms are and how complicate it is to make a diagnosis in certain situations.

Professor Thomas Münzel (right) presents Wolfgang Hanssmann the picture. In the photo with Harald Strutz (left).

Wolfgang Hanssmann donates 6,000 euros for a painting by Udo Lindenberg

Mr. Wolfgang Hanssmann, Board member of the AXA Group of Germany and fan of the 1st FSV Mainz 05 football club, supported the Foundation Heart of Mainz with a major donation. The auction was initiated by Mainz 05. This is the third picture which Udo Lindenberg presented to us. This year's one depicts Udo as a striker for the Mainz 05 team.

Udo Lindenberg knows that Professor Münzel is a fan of the 1st FSV Mainz 05, and that he hardly misses a game in the new Coface Arena. For this reason, he decided to paint a picture of the new stadium.

The head of the Department of Medicine 2 and founder of the Foundation Heart of Mainz knows Udo Lindenberg from his time in Hamburg. Social commitment connects the painter and rock artist and Thomas Münzel, and both share a commitment to help people. Attracted by the idea of the Foundation Heart of Mainz, Lindenberg did not hesitate and helped in his own way.

Rainer Boeckh, Andrea Mänz-Grasmück, Professor Thomas Münzel

Mr Rainer von Boeckh donates 5,000 euro for the Foundation Heart of Mainz

The donation honors our commitment against aircraft noise and for good patient care

Mr Rainer von Boeckh from Mainz-Drais, patient of the Department of Medicine 2 and engaged citizen, donated the sum of 5,000 euros to the Foundation.

"The trigger and most important reason for the donation is your dedicated commitment to health in the fight against aircraft noise," wrote Mr von Boeckh in a letter to the Foundation Heart of Mainz in August 2012. He emphasized the fact that clinic director Professor Münzel commits his time not only to the clinical and scientific success of his department, but also to the health and well-being of the population at large.

Mr. von Boeckh made the donation to support our Foundation also because he felt well cared of as a patient in the Department of Medicine 2. Moreover, Mr. von Boeckh estimates the social importance of volunteering. In previous years, he personally created a Foundation, called the von Boeckh Foundation to preserve the natural environment of a land area of 350 hectares in the Niederlausitz (former east Germany).

Mr Wolfgang Fehres donates 1,520 euros to Foundation Heart of Mainz

Mr. Wolfgang Fehres from Ingelheim donated a cheque for the amount of 1,520 euros to Professor Thomas Münzel, Board member of the Foundation Heart of Mainz. On the occasion of his birthday, Mr. Fehres, a patient of Professor Münzel, had asked his friends to donate money for the Foundation.

Wolfgang Fehres (left) and Professor Thomas Münzel

The Linde pharmacy Nierstein supports the Foundation Heart of Mainz with a donation of 1,459 euros.

The cheque was presented to to Professor Thomas Münzel at the University Medical Center on 16 January 2013, who thanked pharmacist Mrs. Elke Nödling for her commitment.

The donation comes from the proceeds of the "Heart Health Week" initiated by the Linde Pharmacy in October 2012. In the framework of this event, Professor Münzel held a lecture on "Heart attack – development, emergency and prevention" in Nierstein. In the Linde pharmacy, blood pressure measurements were offered and information sessions were organized all week long.

"We thank the Mainz Heart Foundation for its work. Diseases of the heart and circulatory system are the leading cause of death in Germany. Therefore, we believe that the work of the Foundation Heart of Mainz is particularly important", says pharmacist Mrs. Elke Nödling.

The Princess Guard donates 1,111 euros for the Foundation Heart of Mainz

The proceedings of a one and a half hours of selling wine at the stand of the winery Nitschmann-Knewitz on the occasion of the traditional Mainz wine market were donated by the Princess Guard to the Foundation of Mainz. The profit of 568 euro was then raised to 1,111 euros (11 is the "magical" number of Mainz Carnival) by the members of the Guard, a historical group from which the city's soldiers were chosen. President Heinz Tronser, Thomas Knewitz and Commander Fred Janiska handed over the donation to the Treasurer of the Foundation, Ralf Hauck.

37,500 euros earned for the Foundation!

Dr. Sandra Maria Meier, ZDF presenter wins 37,500 euros for the Foundation Heart of Mainz in the quiz show with Jörg Pilawa

The ZDF presenter of the program "Hello Germany," Dr. Sandra Maria Meier was a guest participant in the "quiz show with Jörg Pilawa" on Wednesday, 12 September 2012. With all their correct answers, Ms. Meier and Mr Ralf Moeller won a sum of money which they could donate to the charities of their choice. The Foundation Heart of Mainz was lucky enough to receive a cheque in the amount of 37,500 euros!

"Although I no longer live in Mainz, my heart still beats for Mainz," said Ms. Meier. "In my private life I have had very positive experiences with the Chest Pain Unit of the Department of Medicine 2, which is supported by the Foundation's work. My brother Stephan Meier, who is a doctor, has agreed with me and encouraged me to donate the profits to the Foundation", said Ms. Meier.

The cheque was handed over on Friday, 14 September 2012. Professor Thomas Münzel, Board member of the Foundation, thanked Mrs. Meier for her commitment. "We are particularly excited about the win and the generous donation of Mrs. Meier. With this money, we will promote many of the projects of the Foundation Heart of Mainz. Among others, we would like to strengthen our work with children and young people in the prevention of cardiovascular disease. We hope that our children's health academy will direct the lives of students towards a proactive and responsible lifestyle and avoid many cardiovascular diseases, says Professor Thomas Münzel.

Professor Thomas Münzel, Michael Ilner and Fritz-Eckard Lang of the company Bohrservice Rhein-Main, Bodenheim

Bohrservice Rhein-Main places the best bid for a torso sculpture of the artist Rosi Röhm

On the occasion of the 5th anniversary of the Foundation, the artist Rosi Roehm donated the sculpture representing the torso of a woman's body. The sculpture was put on auction and the best bid came from the company Bohrservice Rhein-Main, SOCIETY FOR HORIZONTAL DRILLING LTD in Bodenheim, for 8,000 euros.

"With this sculpture I would like to thank the selfless commitment of Professor Münzel" said Rosi Röhm. "A torso always attracts attention. This is also what I wish for the Foundation Heart of Mainz" reads the brief and concise letter accompanying the generous donation of Rosi Röhm.

The torso was created in September 2012 by Rosi Roehm, the figure is 92 cm high, the material is made of terracotta and the metallic luster was achieved by a special gas-reduction firing process.

Since the work of the French sculptor Auguste Rodin (1840–1917), the torso become an important means of expression and an independent form of art and representation.

The term "torso" comes from the Italian and indicated a body deprived of its limbs and head. The entire body is thus reduced to the volume filled by the heart.

Mechanical ventilation training courses for nurses in intensive care

Nurses working in intensive care environments require in-depth knowledge about the various forms of "artificial" respiration, since nearly every intensive care patient needs this type of assistance.

The Foundation Heart of Mainz sponsored ten employees and staff of the intensive care unit of the Deparatment of Medicine 2 to attend a course offered by an external organizer. With this training, the nurses were able to acquire in-depth knowledge about controlled and assisted ventilation, spontaneous breathing methods and ventilation pressures.

Financing of such training would have not been possible with the very limited training budget of the University of Medicine. This qualification program which helps to improve patient care in the Department of Medicine 2 was funded with 4,450 euros by the Foundation Heart of Mainz.

Research grant "Interventional Heart Valve Therapy"

So far, about 200 patients underwent transcatheter aortic valve implantation (TAVI) and 100 patients underwent transcatheter Mitral valve reconstruction (TMVR) in the Department of Medicine 2. The procedures are performed in close interdisciplinary collaboration with the Department of Cardiac, Thoracic and Vascular Surgery and the Department of Anesthesiology, University Medical Center.

Now, a structured scientific program to monitor the results of catheter-based heart valve intervention methods can be implemented. The core structure of such an innovative science project is a retro- and prospective standardized collection of clinical, imaging-based, laboratory chemical and procedure-associated parameters and follow-up investigations in a central database ("Mainz register for catheter-based heart valve interventions") to allow addressing clinical and scientific issues using targeted database queries.

In cooperation with the Institute for Myocardial Infarction Research in Ludwigshafen, which has a long proven expertise in the creation and maintenance of large patient registries in the field of cardiovascular disease, the existing patient database of interventional heart valve therapy was optimized, updated and expanded.

The independent Scientific Advisory Board of the Foundation with Professor Thelen at the top, Professor Thomas Meinertz and Professor Werner recommended in October 2012 to promote this innovative research project of Dr. Zsófia Bárdonicsek with a sum of 36,000 euros.

Dr. med. Zsófia Bárdonicsek,
recipient of the Stipendium 2012 of the Foundation

Research grant for the preclinical project ”Effects of sGC activator therapy on nitrate tolerance“

Application of Matthias Oelze, PhD and Professor Andreas Daiber

Organic nitrates are among the most common oral medications for the treatment of patients with chronic symptomatic coronary artery disease, acute myocardial infarction and chronic heart failure. One problem of nitrate therapy is the development of nitrate tolerance and endothelial dysfunction, which has limited for more than 100 years the use of these substances. It has been shown that the endothelial dysfunction can be corrected by administering vitamin C, suggesting the involvement of reactive oxygen species in the genesis of this phenomenon.

Further, it is known that nitrates influence the activity of the soluble guanylate cyclase (sGC). What has not been studied so far, are the effects of chronic ISMN therapy on sGC activity and the effect of co-therapy with sGC stimulators and activators.

These questions are to be addressed with an ambitious experiment supported by the Foundation Heart of Mainz. Long term, the results will be used to improve the long-term therapy of patients with severe heart failure.

The Mainz Heart Foundation supported this preclinical, experimental project with a funding of 40,000 euros

A new ultrasound machine for the Gutenberg Health Study

With the proceedings of the donations for the 3rd Mainz Heart Foundation Ball, an ultrasound machine for the amount of 53,000 euros was financed. The machine will be used for the measurement of vascular function in subjects of the Gutenberg Health Study (GHS). To date, 15,000 volunteers from Mainz, Bingen and Ingelheim were included in the GHS and on the 1st May 2012 we started with the 5-year follow-up.

This study is actively supported, among others, by the Foundation and is unique in the world and will run until at least 2017.

Left to right: Professor Tommaso Gori, Teresa Peter, Professor Philipp Wild, Christian Gertler, Professor Thomas Münzel, Andrea Mänz-Grasmück

Events 2012

Datum	Art	Thema
21. March	Presentation for patients “The Foundation informs...“	Presentations on the theme **”Heart failure“**
28. March	Meeting of the Landfrauen association in Kruft Eifel in cooperation with SWR4 Rheinland-Pfalz	On the topic **”Women‘s health“** Podium Diskussion with Prof. Dr. med. T. Münzel, Dr. Erik Hein and SWR 4-Moderator Dr. Daniela Engelhardt u.a.
20. April	Health day with goal shooting for youngsters in the theater square in Mainz	Information sessions ● **cardiovascular game** ● **goal shooting**
23. – 25. April	Children‘s Academy	Prevention program for children and youngsters with presentations, games, interactive media.
27. Juni	Presentation for patients “The Foundation informs...“	Presentations on the theme ● **lipid-lowering drugs** ● **self-absorbing stents** ● **transcatheter valve operations**
19. September	Presentation for patients “The Foundation informs...“	Presentation for patients ● **syncope** ● **stent versus by-pass** ● **pace-makers**
10. November	3. Mainz Heart Foundation Ball in the city‘ s castle	Fundraising-Event
21. November	Heart evening 2011 **“Heart in danger“**	Presentations on the theme ● **heart attack** ● **the new organization of chest pain units in Germany** ● **heart and mind**

The Foundation Heart of Mainz organizes the third university goal shooting in the theater square in Mainz.

The third university goal shooting was organized by our Foundation on Friday, the 20th of May 2012.

The event took place in the very central theater square in Mainz. Children and young people as well as parents had the opportunity to participate in the cardiovascular game, a German Federal Ministry of Research (BMBF)-sponsored set of interactive stands designed to provide information on how the heart and the blood vessels function. The university goal shooting, hosted by Mainz 05-announcer Klaus Hafner, was the highlight of the event. The winners of the goal shooting received prizes in the form of tickets to the ZDF sports club, the ZDF television garden and for Bundesliga matches of the 1st FSV Mainz 05.

The goal shooting was opened at 14.00 clock by Professor Georg Krausch, President of the Johannes Gutenberg University, Harald Strutz, president of 1st FSV Mainz 05 and Professor Thomas Münzel, Board member of the Foundation Heart of Mainz.

Health is not a question of age, but of attitude. Therefore, prevention is important and cannot start early enough. At this event, all participants learn through games important things about the health of one's heart. Professor Thomas Münzel, is sure that one must find new ways to reach young people.

This event was supported by the 1st FSV Mainz 05 and the ZDF, the second German television network.

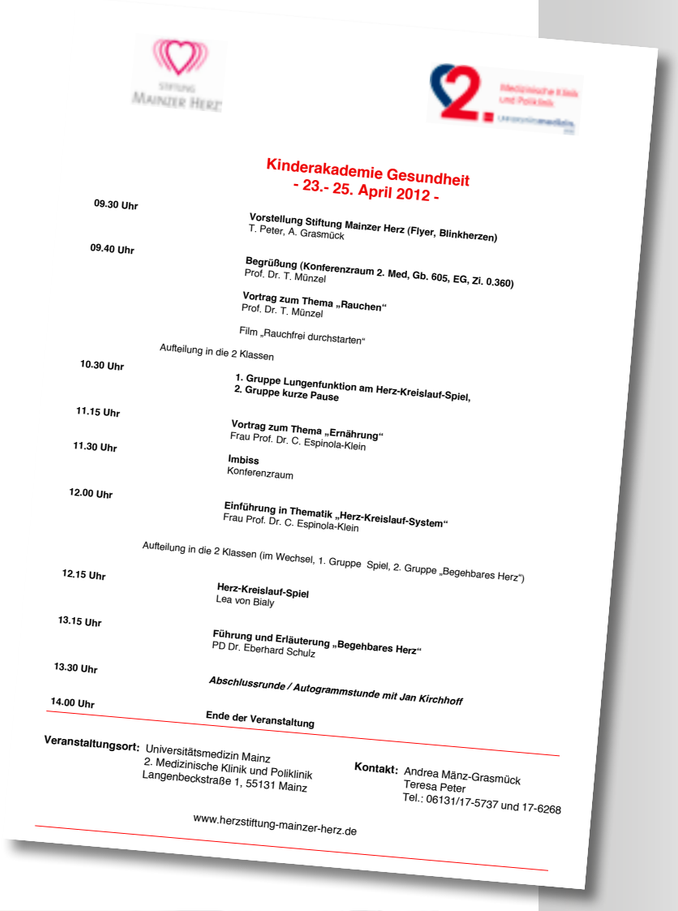
Children's Health Academy

Four classes of young students were invited to this year's Children's Health Academy organized by the Foundation and the Department of Medicine 2. The clinic was visited by two 6th year classes of secondary school from Wöllstein and two 8th year classes from Bad Kreuznach. All groups were offered a four-hour program which matches their science curriculum – themes are "body and health" and "conscious ownership" of the body.

The program started with a presentation on the topic smoking and was continued with presentations on obesity and healthy eating.

The students could look how the heart is made by walking in a gigantic replica.

This event was supported by the 1st FSV Mainz 05 football club; the player Jan Kirchhoff and the manager Christian Heidel attended in the lessons. Both tiredlessly repeated the fact that sports and smoking are not compatible .


Kinderakademie Gesundheit
- 23.- 25. April 2012 -

09.30 Uhr — Vorstellung Stiftung Mainzer Herz (Flyer, Blinkherzen)
T. Peter, A. Grasmück

09.40 Uhr — Begrüßung (Konferenzraum 2. Med, Gb. 605, EG, Zi. 0.360)
Prof. Dr. T. Münzel

Vortrag zum Thema „Rauchen"
Prof. Dr. T. Münzel

Film „Rauchfrei durchstarten"

Aufteilung in die 2 Klassen

10.30 Uhr — 1. Gruppe Lungenfunktion am Herz-Kreislauf-Spiel,
2. Gruppe kurze Pause

11.15 Uhr — Vortrag zum Thema „Ernährung"
Frau Prof. Dr. C. Espinola-Klein

11.30 Uhr — Imbiss
Konferenzraum

12.00 Uhr — Einführung in Thematik „Herz-Kreislauf-System"
Frau Prof. Dr. C. Espinola-Klein

Aufteilung in die 2 Klassen (im Wechsel, 1. Gruppe Spiel, 2. Gruppe „Begehbares Herz")

12.15 Uhr — Herz-Kreislauf-Spiel
Lea von Bialy

13.15 Uhr — Führung und Erläuterung „Begehbares Herz"
PD Dr. Eberhard Schulz

13.30 Uhr — Abschlussrunde / Autogrammstunde mit Jan Kirchhoff

14.00 Uhr — Ende der Veranstaltung

Veranstaltungsort: Universitätsmedizin Mainz
2. Medizinische Klinik und Poliklinik
Langenbeckstraße 1, 55131 Mainz

Kontakt: Andrea Münz-Grasmück
Teresa Peter
Tel.: 06131/17-5737 und 17-6268

www.herzstiftung-mainzer-herz.de

Thereafter, the students could test their own lung function and have a direct glimpse at the function of the heart and blood vessels with a set of interactive games.


Full power!


Great commitment for the common matter – Christian Heidel, Manager of the 1st FSV Mainz 05


This is how the heart sounds like.


This is the best I can do!


This is how the heart looks like - in large scale!

How does a heart valve feel like? Dr. Schulz explains the function of a heart valve.


Full in action!


Autographing session with Jan Kirchhoff

Chest Pain Unit Awareness Campaign with the 1st FSV Mainz 05

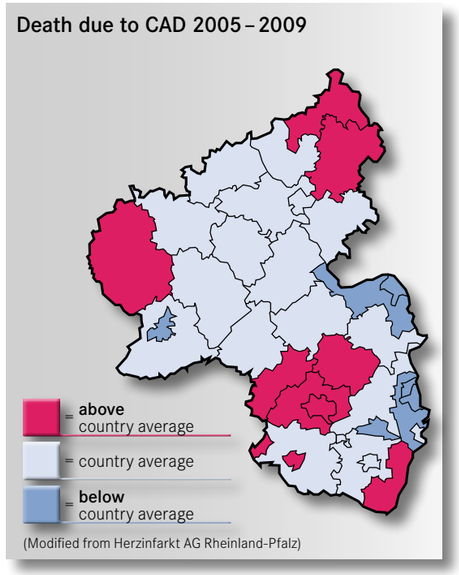
In March this year, the Mainz 05 gave us the opportunity to draw attention on our Chest Pain Unit (CPU) at the Coface Arena, the Mainz Bundesliga Stadium.

The CPU, which was built in 2005 as one of the first units of its kind in Germany, is the first stop for patients with chest pain. In Mainz, we treat approximately 600 patients with myocardial infarction annually. And the statistics show that heart attack patients from Mainz and the surrounding regions fare much better compared to the rest of the Rhineland-Palatinate, a difference which has certainly to do with the new and effective supply structure of the CPU.

Residents of Mainz and the surrounding areas have a much lower chance to die of a heart attack compared to the region's average (with the permission of the heart attack AG Rheinland Pfalz)

It was definitely nice to see the logo of the Mainz Heart Foundation light up on the scoreboard the Coface Arena.

We are grateful to Mr. Hafner and Mr. Strutz for their personal involvement in this matter.



The "Foundation Heart of Mainz informs…"

Patient conference on heart failure at the 21st of March.2012

Around 1.8 million people in Germany suffer from heart failure, and this number is increasing steadily. But what is to be understood, from a medical perspective, under the name heart failure?

On the 21st of March, in two detailed presentations, Professor Thomas Rostock and Professor Thomas Münzel gave an overview on the clinical presentation of this disease and then went on to answer the questions of the public:

- Why is the heart weak in heart failure patients, and what role does the cardiac rhythm play?
- What are the symptoms of heart failure?
- What methods can help determine the diagnosis heart failure?
- How do I treat a weak heart?
- Can I perform physical exercise, despite a weak heart?
- What drugs are currently used for the treatment of heart failure?
- How is my life expectancy changed if I have a weak heart?

After the presentations, a number of donations were collected.

Professor Münzel and Professor Rostock during the discussion

The "Foundation Heart of Mainz informs…"

Patient meeting "around the heart" on Wednesday, 27th of June 2012

A patients' evening was organized to discuss several topics of interest for the patients: titles of the presentations were the following:

- **"Drugs in the news: statins and vitamins"**
  Professor Thomas Münzel
- **"The self-absorbing stent: a revolution in the treatment of coronary heart disease is now also offered in Mainz"**
  Professor Thomas Münzel
- **"Percutaneous heart valve therapy update"**
  Dr. Ulrich Hink

We received many questions

The "Foundation Heart of Mainz informs…"

Patient event on various "cardiac issues", Wednesday, 19th of September

Professor Thomas Münzel and Professor Thomas Rostock held presentations on the following topics:

- **"Syncope"**
  This is the formal medical term for what colloquially is usually known as circulatory collapse. A syncope is accompanied usually with a short-term cerebral ischemia. It is one of the most important diagnoses in the emergency department. A short film was shown, which explains the many causes of syncope and its consequences, such as for instance the fact that these patients should not be allowed to drive a car.
- **"When stent and when bypass surgery?"**
  This remains an important issue. Most patients faced with this choice usually opt for a stent. There are new guidelines that show when, and for which patient, each procedure is most appropriate.
- **"Fat-lowering drugs, when to take them?"**
  As well, there is an ongoing discussion on the "fat-lowering" drugs named statin, and when to take them. One should take statins to prevent myocardial infarction (primary prevention), or, for those who already had a heart attack, to prevent relapses (secondary prevention). Here, too, the latest results were presented.
- **"Progress report of a patient with diabetes"**
  One patient, who was thanks to an extremely disciplined change in lifestyle able to defeat a diabetes, reported on his own experiences. He encouraged those who can, to change their life. Such a positive pro-active actitude is very rare and deserves to be taken as a role model for all patients who are in a similar situation.
- **"Pacemaker an atrial fibrillation"**
  Professor Rostock dealt with the themes of "pacemaker" and of course atrial fibrillation.:
  - **When do I need a pacemaker?**
  - **What models are there?**
  - **How long is the life of a pacemaker?**
  - **How often do I have come to control ?**
- **"Recent findings from large studies"**
  Professor Rostock also reported on recent findings from large studies on "atrial fibrillation" presented at the European Society of Cardiology Congress 2012 in Munich.

The "Foundation Heart of Mainz informs…"

In context of the German Heart weeks, a patients' evening was held on the 21st of November 2011

Prof. Thomas Münzel, Prof. Jochen Senges and Prof. Manfred Beutel held three lectures on the following topics:

- **"How to diagnose a heart attack?"**
- **"What does the new Chest Pain Unit network offers to patients in Germany"?**
- **"Heart and mind"**

Professor Beutel pointed out the importance of depression as a risk factor and as a problem for the succes of the therapy of heart diseases

Professor Münzel and Professor Senges (form Ludwigshafen) have declared war against heart attacks

Third Ball of the Foundation Heart of Mainz

300 guests accepted the invitation to the “3rd Ball of the Foundation Heart of Mainz“ on November the 7th at the castle in Mainz.

Proceeds from the event this year were used to finance an ultrasound device for the Gutenberg Health Study. The guests enjoyed a three course meal from the Mainz restaurant “Favorite“ and went on to burn the calories on the dance floor to the music of the band Jammin Cool.

SWR TV presenter Patricia Küll moderated the evening as usual. Guests for talks on stage were Mayor Ebling, Harald Strutz from the 1st FSV Mainz 05 and the President of the Johannes Gutenberg University, Professor Georg Krausch.

One of the highlights of the event: a raffle to win one of five tickets to the then imminent Top game in the Bundesliga, 1st FSV Mainz 05 versus Borussia Dortmund, a free flight over Mainz in a historical Ju52 and a gift certificate for the fashion studio Anja Gockel.

Foundation Heart of Mainz-Supporters from Saudi Arabia

Supporters of the Foundation Heart of Mainz from Saudi Arabia
Sheik Abdulaziz Alraman Al Yabes and Mr. Abdulaziz Al Rawaf

2013 Schedule at a Glance

The annual program for 2013 is already available.:

- We will organize three information evenings for patients. Events will be open to all members of the Friends Circle and the Board of Trustees, as well as all those interested.
- There will also be a monthly newsletter, which can be downloaded from the website of the FOUNDATION HEART OF MAINZ.

  A Patients‘ evening will also be organized as in previous years.
- The Children‘s Academy remains in our plans for 2013 too. We plan to invite classes of youngsters from secondary schools from various regions in Rhineland-Palatinate.

Datum	Veranstaltung	Themen	Ort
27. February	“The FOUNDATION informs...“	Evening for patients, relatives and interested persons	Universitätsmedizin Mainz Geb. 505 H Hörsaal Chirurgie
5. March	Presentation for patients Alzey	Information evening	DRK Krankenhaus Alzey
6. March	St. Alban Charity-Gospel Concert	Charity-Concert	St. Alban, An der Goldgrube 44, 55131 Mainz
13. – 17. May und 10. - 14. June	Childrens‘ academy	Prevention program for children and youngsters with presentations and interactive games on the importance of prevention and heatlhy living	Universitätsmedizin Mainz 2. Medizinische Klinik und Poliklinik
27. May	1st. Gutenberg Health Golf Tournament	Fundraising Event	Golfclub Rheinhessen Wissberg Start 12.00 o‘clock
12. June	“The FOUNDATION informs...“	Evening for patients, relatives and interested persons	Universitätsmedizin Mainz Geb. 505 H Hörsaal Chirurgie
11. September	“The FOUNDATION informs...“	Evening for patients, relatives and interested persons	Universitätsmedizin Mainz Geb. 505 H Hörsaal Chirurgie
16. November	4. Mainz Heart Foundation Ball	Fundraising Event	Mainzer Schloss

Projectplan 2013

We plan to finance projects in research, prevention and patient care.

We have identified **7 project areas** that we want to support with your donations. Our major projects are:

- the children's academy, a prevention program on heart, obesity and smoking, which we offer in our clinic for schools
- pre-clinical and clinical research
- as well as the resuscitation training offered to nurses in the CPU

Projectaera	Theme	Financial Need
1	**Experimental Research**	**30,000 Euro**
2	**Prevention program for children including health academy** • Cardiovascular physiology • Overweight • Smoking • Walk-in heart • Movies on the subject of smoking, obesity and function of the cardiovascular system	**25,000 Euro**
3	**To renew and improve the cardiovascular game**	**20,000 Euro**
4	**Gutenberg Health Study**	**50,000 Euro**
5	**Chest Pain Unit-qualification course for nursing**	**10,000 Euro**
6	**Continuation of the postdoctoral fellowship in interventional valve therapy**	**24,000 Euro**
7	**Doll for resuscitation training**	**12,000 Euro**
	Insgesamt:	**171,000 Euro**

Project 1
Experimental Research

We support experimental research with a promising approach, hoping that the research results will in future contribute to the health situation of our patients.

Applications for research grants can be addressed to the Foundation Heart of Mainz. The independent academic advisory Board of the foundation decides on the projects which will be supported.

Costs of project

40,000 Euro

Project 2
Topic:
Prevention in Children and Adolescents

Also this year, we plan to continue our prevention program for children and youngsters of 10 – 12 years. Invitations are sent to schools through the Ministry of Culture of Rhineland-Palatinate.

The program of the Children Health Academy includes four hours of presentations, films and interactive games and is associated with a visit to the University Medical Center.

The funding will be used primarily for the itinerary (travel costs, material costs, funds to create footage) and for renting the "walk in"-heart. The presentations of the lecturers, the support of the practical exercises and the provision of premises are free of charge.

The following points will be discussed:

- Cardiovascular Physiology
- Obesity / Healthy eating
- Smoking
- Resuscitation training

For audio-visiual media support for disposal:

- a 3-meter-high walk-in heart
- the cardiovascular game
- Films
- interactive lectures are made available for the attendees.

The event aims:

to stimulate the understanding and "conscious ownership" of your own body

Estimated cost of the Project:

for the prevention program and health academy for children and adolescents:

25,000 Euro

Project 3
Topic: Improvement and revision of the "cardiovascular game"

The project "cardiovascular game" is about health prevention concerning cardiovascular diseases among children and young persons. The intention is to provide an approach to the topic.

By "learning by doing", several stages have to be gone through which stimulate the children to active learning:

- a **water pump** illustrates the pump function of the heart
- the stage **"high striker"** symbolizes the cardiac output and the heartbeat
- another stage is about **lung function testing**
- and one about the body mass index.

Further on

- the progress in science and research are presented on a showcase
- and technical devices for the treatment of cardiovascular diseases are shown.

- Focus is on the presentation of the risk factors – overweight and lack of exercise are increasing problems in our society.

The game is an approach to health prevention and education concerning the risk factors.

Costs of project:

20,000 Euro

Project 4
Topic: Gutenberg Health Study

The recruitment of volunteers for the Gutenberg Health Study is progressing and, after reaching the figure of 15,000 subjects from the area of Mainz, Bingen and Ingelheim in March 2012, we now have started the follow-up of the whole population.

The Department of Medicine 2 has now raised more than 15 million euros in order to conduct the study successfully. The execution of such a mega-trial is costly. For this reason, the foundation whishes to support this important project.

Total costs:

50,000 Euro

Project Leader:

Professor Thomas Münzel
Professor Philipp Wild

Project 5
Topic: Chest Pain Unit-qualification course for nurses

Initial situation:

The Chest Pain Unit (CPU) has proven itself as a highly successful structure here in Mainz.

Having a CPU means that patients with chest pain can be diagnosed and treated quickly and effectively, thus reducing the chance of a fatal heart attack.

Recent studies have shown that successful treatment of patients depends to a large extent on the training and the related expertise of the nurses.

Aim and description of the project:

The Mainz Chest Pain Unit was the first CPU in Germany to be re-certified by the German Cardiac Society (DGK).

Important requirements of the CPU itself are regular training and emergency training for the nursing staff. To meet these requirements, we have designed a CPU qualification course for nurses which was successfully implemented in 2012 for the first time.

The course is conducted part-time and includes a mix of 64 hours of lessons and 36 hours of self-study. Due to its success the course will also be offered in 2013.

Among the courses:

- CPU-related cardiac diseases and their treatment according to current scientific knowledge
- Cardiac arrhythmias and their acute therapy
- Conflict Management
- Real-world diagnostic and therapeutic methods
- Monitoring and specialized care in a CPU
- ESC guidelines faithful resuscitation course with subsequent certification

Expected result:

- Approx. 40% of staff will then have an additional qualification
- Improve the quality of care
- Motivation and retention of staff, and recruitment of new qualified members
- Fulfillment of the certification criteria of the DGK

Overall management of the project:

Gabriele Maas
(Department Head CPU,
line Case Management)

Costs of project:

10,000 Euro

Project 6
Scholarship in interventional valve therapy

Continuation of the scholarship of Dr. Bardoniszek:

So far, about 200 Transcatheter Aortic Valve implantations (TAVI) and 50 Transcatheter Miral Valve Reconstructions (TMVR) have been performed in the Department of Medicine 2. The procedures are performed in close interdisciplinary collaboration with the Department of Cardiothoracic and Vascular Surgery, and the Department of Anesthesiology, University Medical Center.

Project Description:

Now a structured scientific program of catheter-based heart valve intervention methods can be implemented. Core structure of such an innovative science project is the standardized collection in a central database (“Mainz register for catheter-based heart valve interventions“) of retrospective and prospective data on clinical, imaging-based, laboratory chemical and procedure-associated parameters and on the follow-up investigations. This database will allow us to address specific clinical and scientific questions using database queries. This project is run in cooperation with the Institute for Myocardial Infarction Research, Ludwigshafen, Germany, which has a long proven expertise in the creation and maintenance of large patient registries in the field of cardiovascular disease and it builds on the existing Microsoft Access-based patient database.

Project costs:

24,000 Euro

Project 7
doll for resuscitation training

This doll is required for resuscitation training in hospital, but can also be useful for our chest pain unit-training.

Costs of project:

12,000 Euro

Contact

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