

Variation in diagnosis and care of chronic heart failure - results, implications and limitations of secondary data analyses

Jörg Bätzing-Feigenbaum - Maïke Schulz - Mandy Schulz - Dominik Graf von Stillfried

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Background

- **Basic assumptions:** therapy of chronic left-sided heart failure (CLHF) according to evidence-based guidelines can
 - reduce clinical symptoms and improve QoL
 - amend prognosis
 - reduce hospitalization rates

- **Aim of the study:**
 - population-based indicators to test for therapy according to guideline recommendations
 - determine regional, age- and gender-related variations
 - identify GPs' and cardiologists' contributions

- **Indicators available in the nationwide ambulatory claims data at Zi (= secondary routine health care data):**
 - prescriptions of heart-specific medicaments
 - use of echocardiography in patients recently diagnosed with CLHF
 - seasonal influenza vaccination according to national recommendations

The Guidelines used in the study

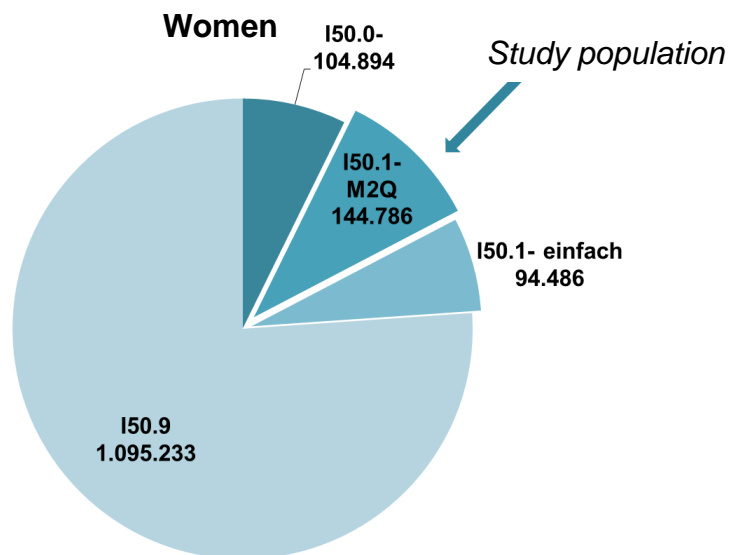
- National Health Care Guidelines CHF (Germany, „NVL“)
- DEGAM Guidelines CHF (German College of General Practitioners and Family Physicians)
- Guidelines of the German Cardiac Society (Deutsche Gesellschaft für Kardiologie, Herz- und Kreislaufforschung)
- General Practitioners' Guidelines CHF State of Hesse (Germany)
- Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure (European Society of Cardiology, ESC)
- Guidelines of the American College of Cardiology (ACC) and the American Heart Association (AHA)
- National German Vaccination Recommendations (Standing Committee on Vaccination, STIKO, at the Robert Koch-Institute, RKI)

Recommendations according to available Guidelines

Guidelines show a high degree of agreement that

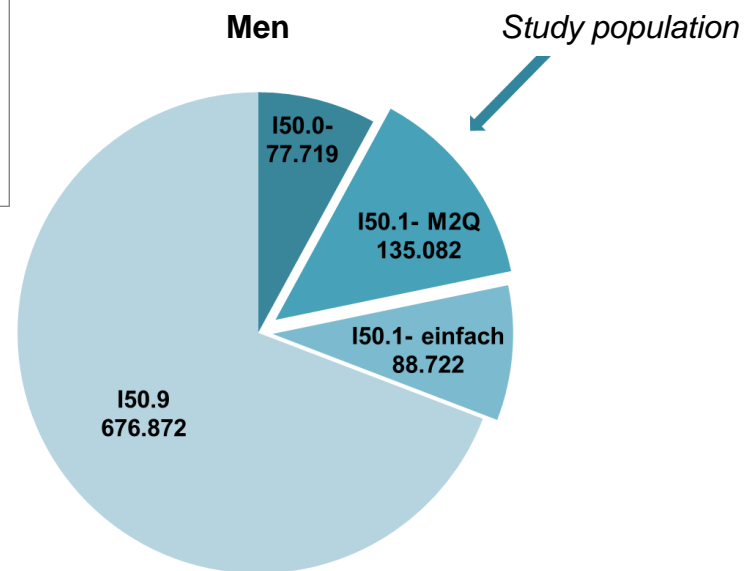
- patients with systolic dysfunction and without contraindications should receive an **ACE inhibitor** or in case of intolerance an **AT1 antagonist**;
- symptomatic patients with CHF (NYHA II-IV) and without contraindications should receive a **beta-blocker**;
- newly diagnosed patients with CLHF should have an **echocardiography**;
- patients with chronic heart disease should receive an **annual influenza vaccination**.

Study Population



- Rechtsherzinsuffizienz, I50.0-
- Linksherzinsuffizienz nach M2Q, I50.1-
- Leinksherzinsuffizienz einfach, I50.1-
- Herzinsuffizienz nicht näher spezifiziert, I50.9

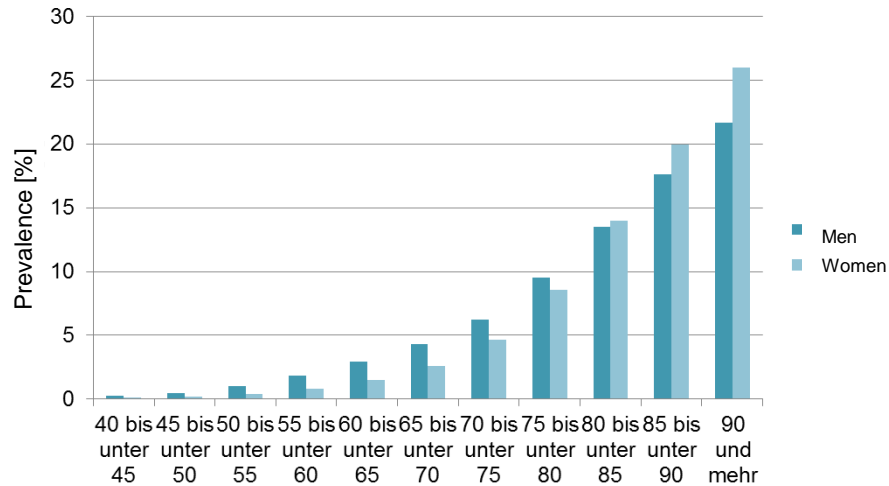
Patients with CLHF were identified in the national German claims data via the ICD-10 code I50.1 “G” (G = confirmed diagnosis) coded at least in two quarters of the year 2009 (“M2Q-criterium”)



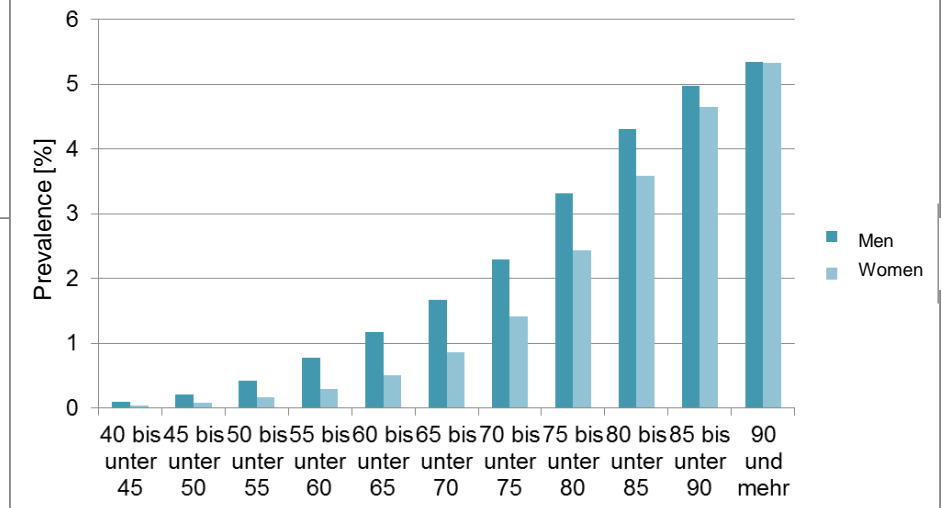
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Administrative prevalence of CHF and CLHF by sex and age groups

Prevalence of CHF (%)



Prevalence of CLHF I50.1, I50.01 (%)



HEART FAILURE

Epidemiology, aetiology, and prognosis
of heart failure

John J McMurray, Simon Stewart

Clinical Research Initiative in Heart Failure, Wolfson Building,
University of Glasgow, Glasgow, UK

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- Comprehensive clinical registries collected in conjunction with clinical trials. These include a large proportion of individuals who were identified on the basis of having both impaired left ventricular systolic dysfunction and signs and symptoms of heart failure.

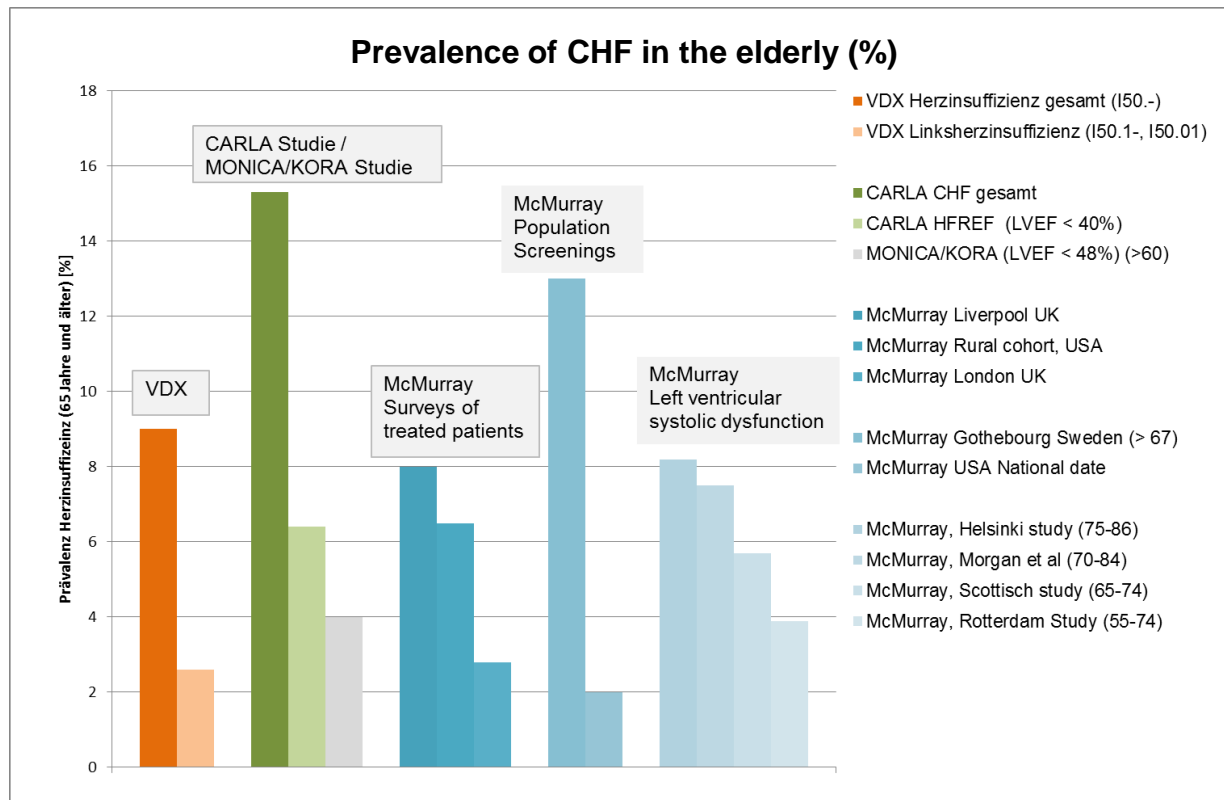
Within the context of the specific limitations of the type of data available from these studies, the current understanding of the aetiology, epidemiology, and prognostic implications of chronic heart failure are discussed here.

Heat failure is now recognised as a major and escalating public health problem in industrialised countries with ageing populations. Any attempt to describe the epidemiology, aetiology, and prognosis of heart failure, however, must take

Epidemiology of heart failure

Prevalence

Table 1 summarises the reported prevalence of heart failure according to whether this was

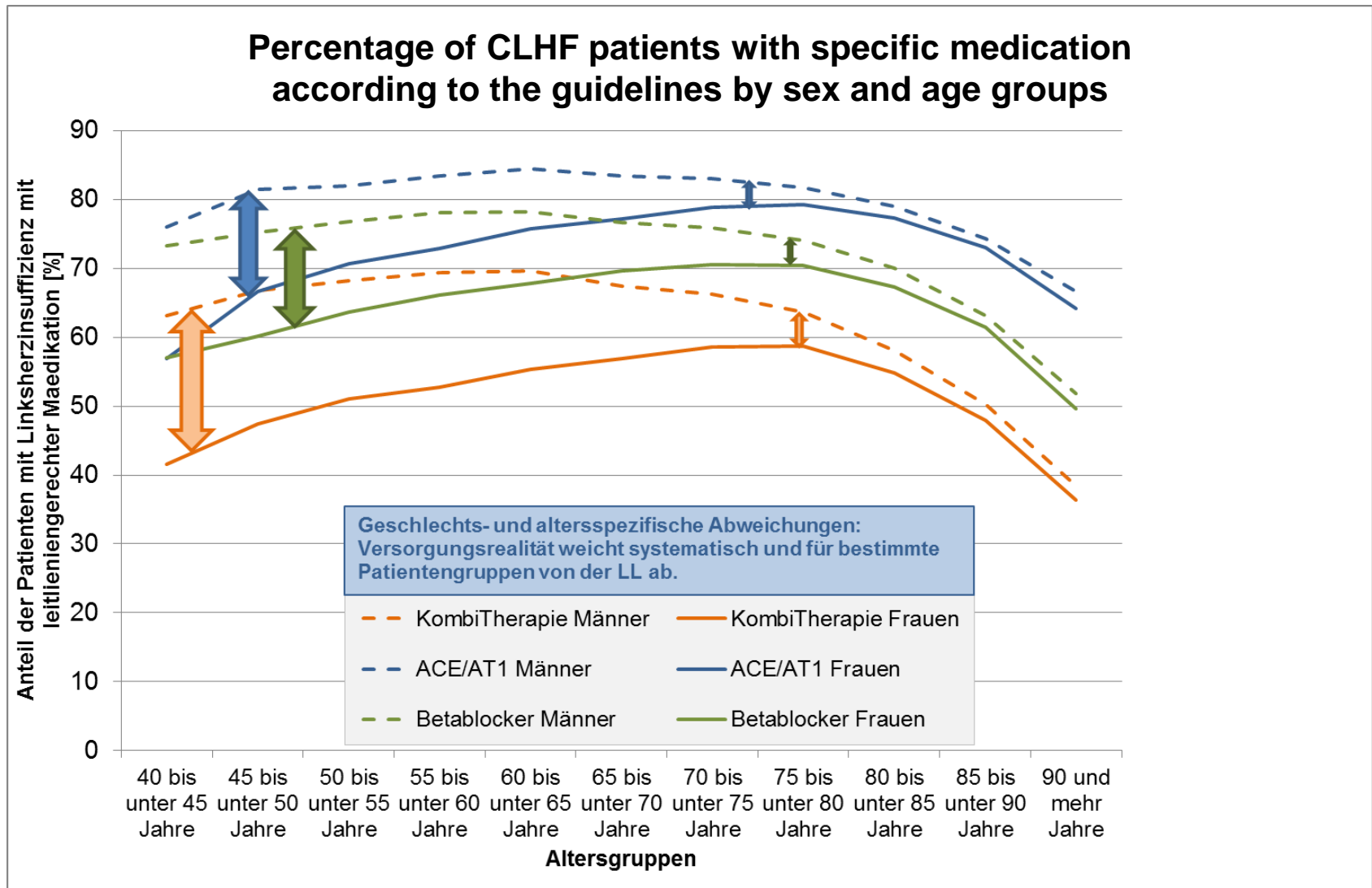


Source:

Own figure based on

- VDX-Data (Zi)
- CARLA-Study
- MONICA-Study
- McMurray et al.

Results: CLHF-specific Medication

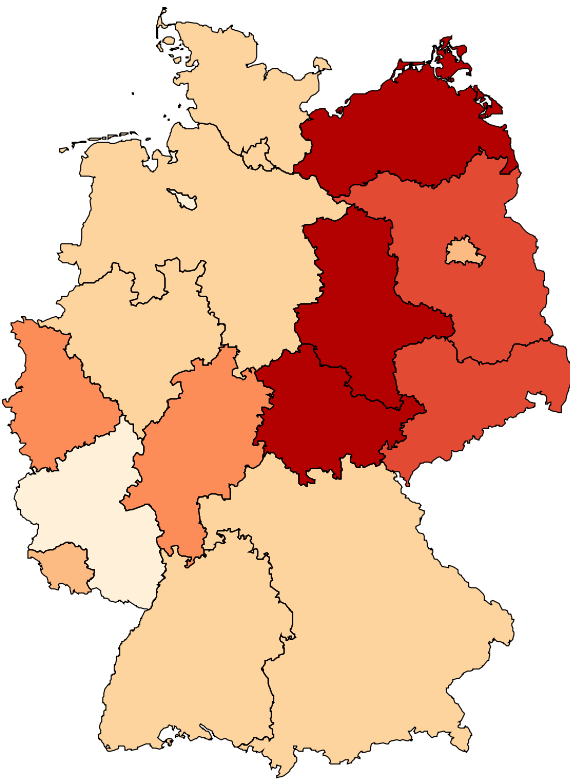


AVD/VDA-data 2011, N = 433.560 patients, I50.1- M2Q

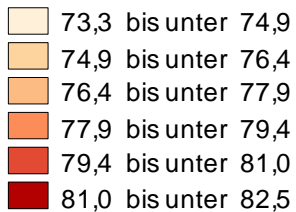


CLHF-specific medication by regions

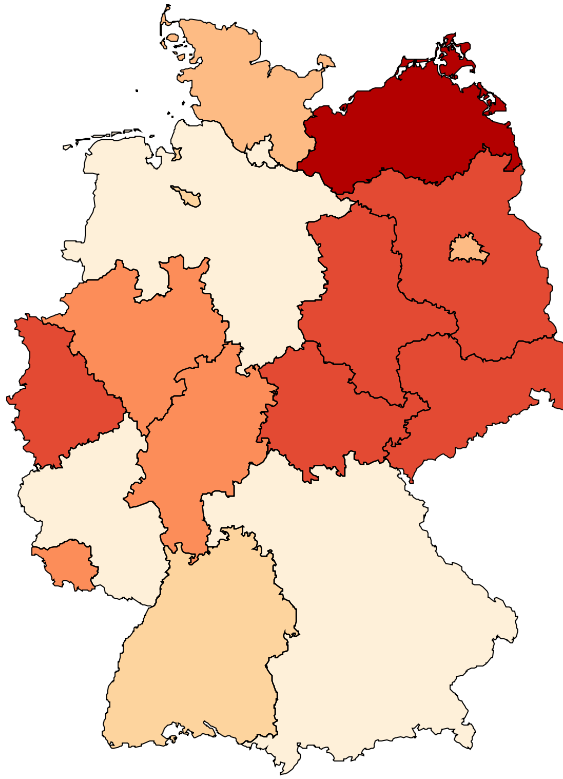
Percentage of patients ≥ 40 years with CHLF and specific medication according to the guidelines by regions, Germany, 2011



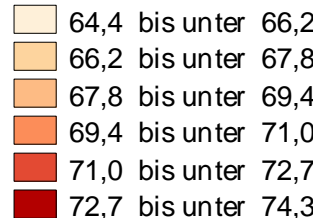
ACE and/or AT1



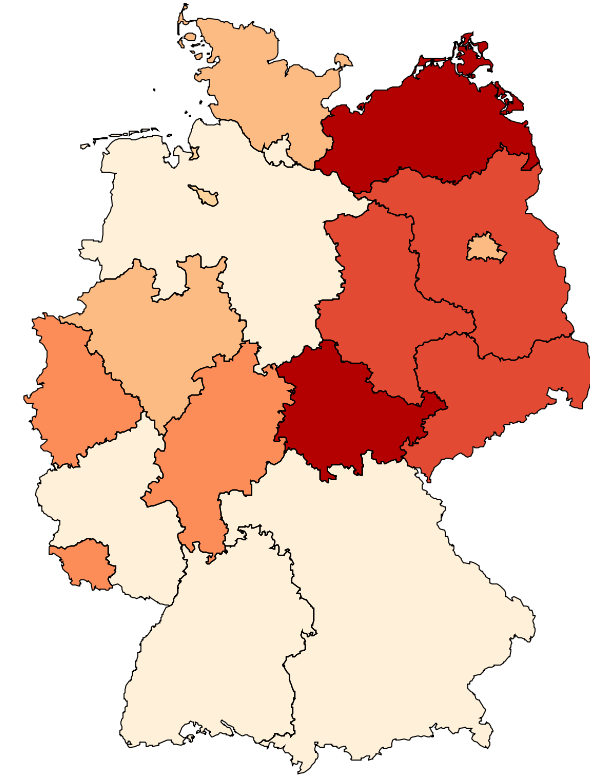
Directly age- and sex-standardized



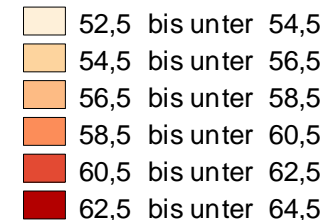
Betablocker



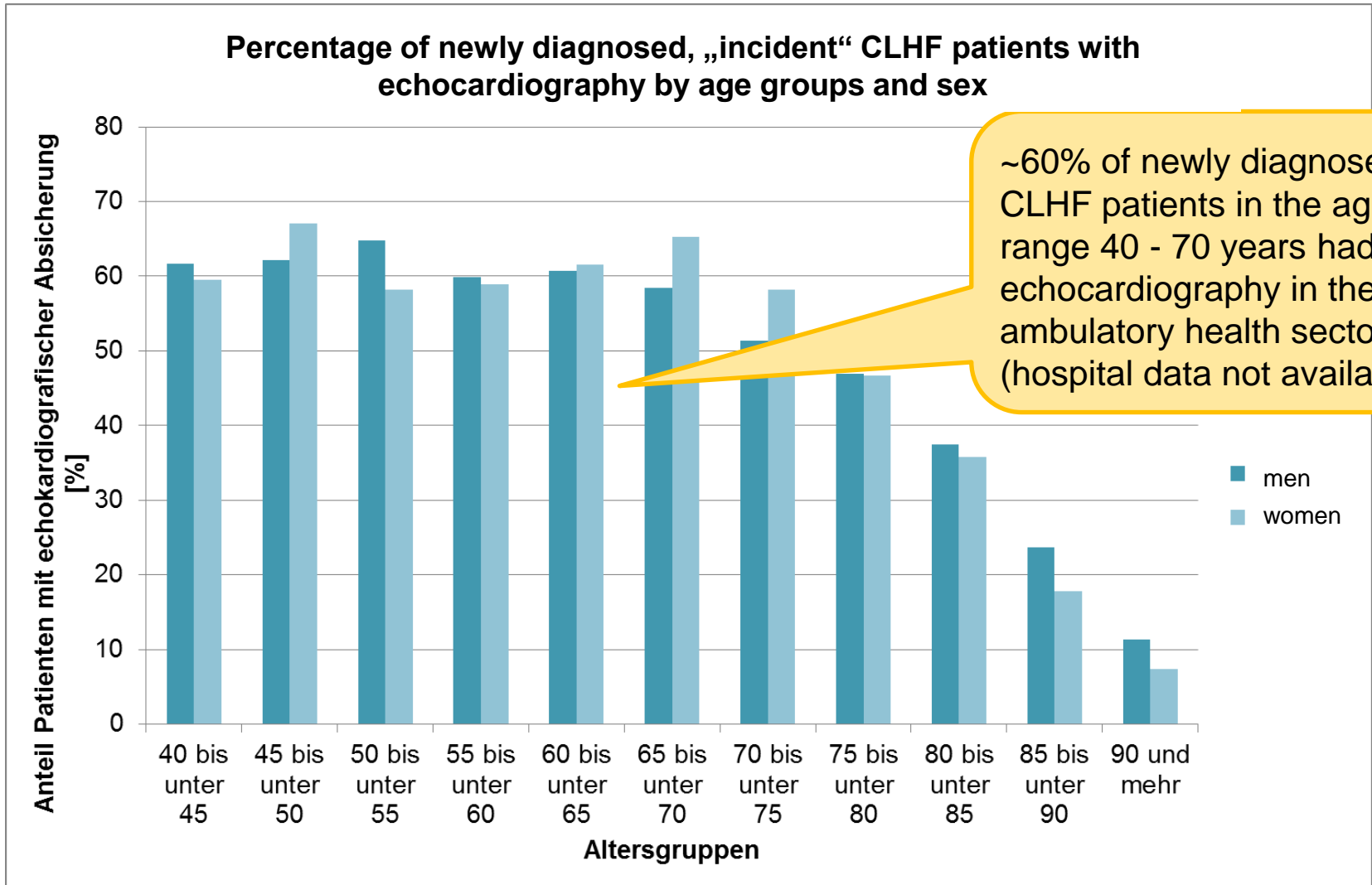
AVD / VDA-data 2011, N = 433.560 patients, I50.1- M2Q



ACE/AT1 combined with Betablockern



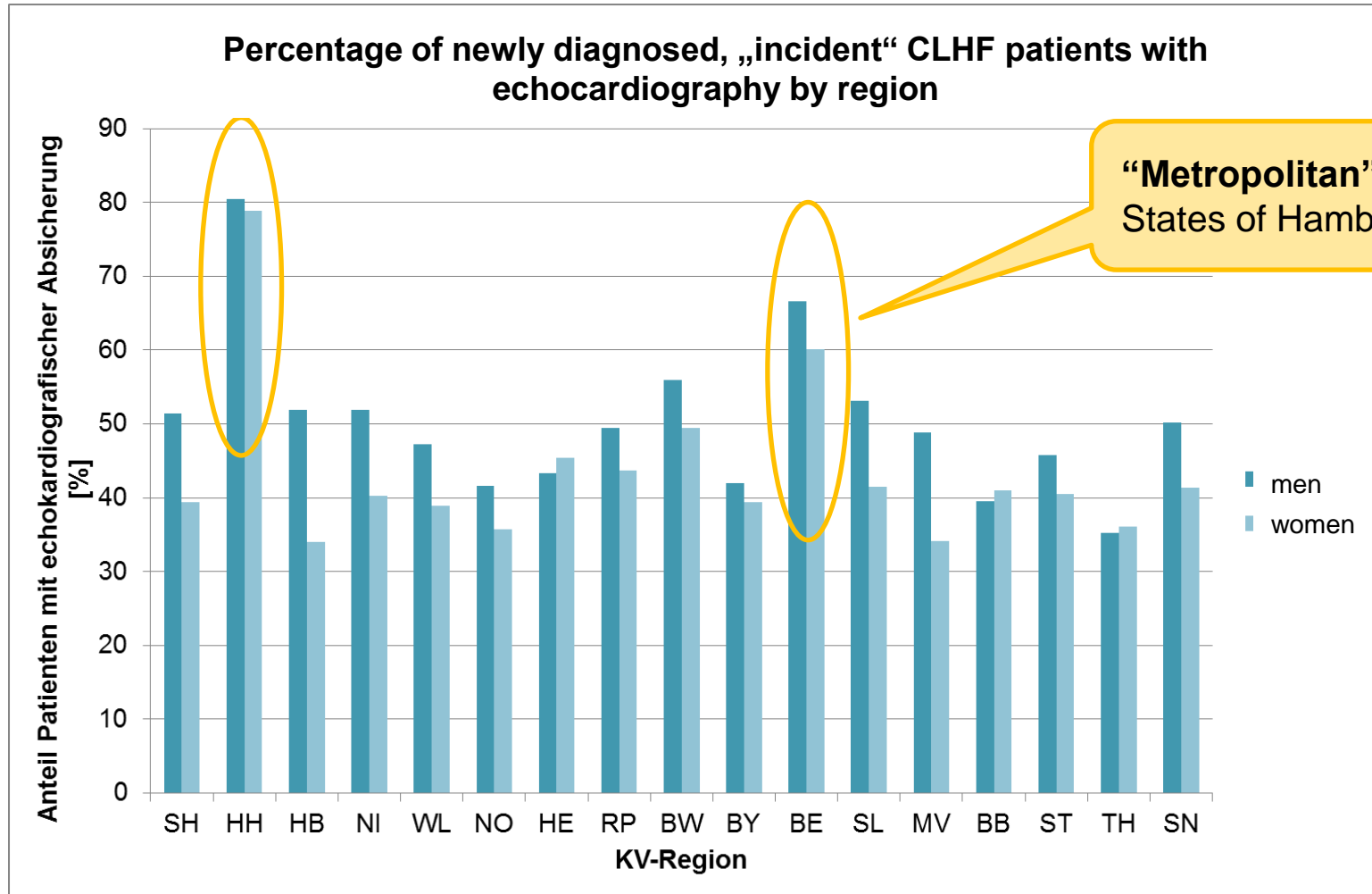
Echocardiography in newly diagnosed CLHF patients



Study sub-population of patients with suspected CLHF (ICD-10 I50.1-) in 2009 and without 2008 this code in 2008 and who had an echocardiography in 2009 or in the first quarter of 2010

VDX-data 2009, N = 13.664 patients, I50.1“V“ (V = suspected case) in 2009 and no I50.1- in 2008

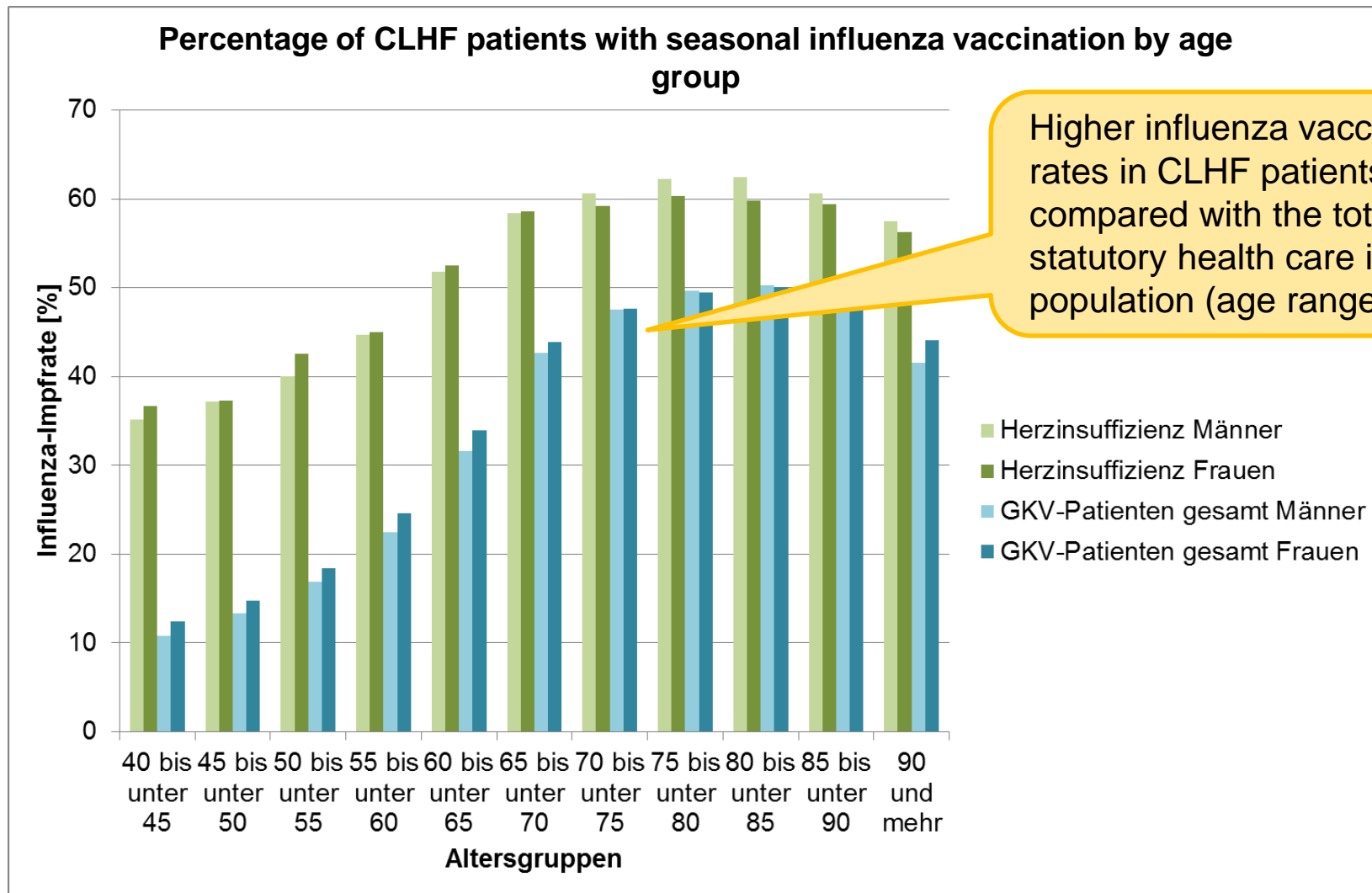
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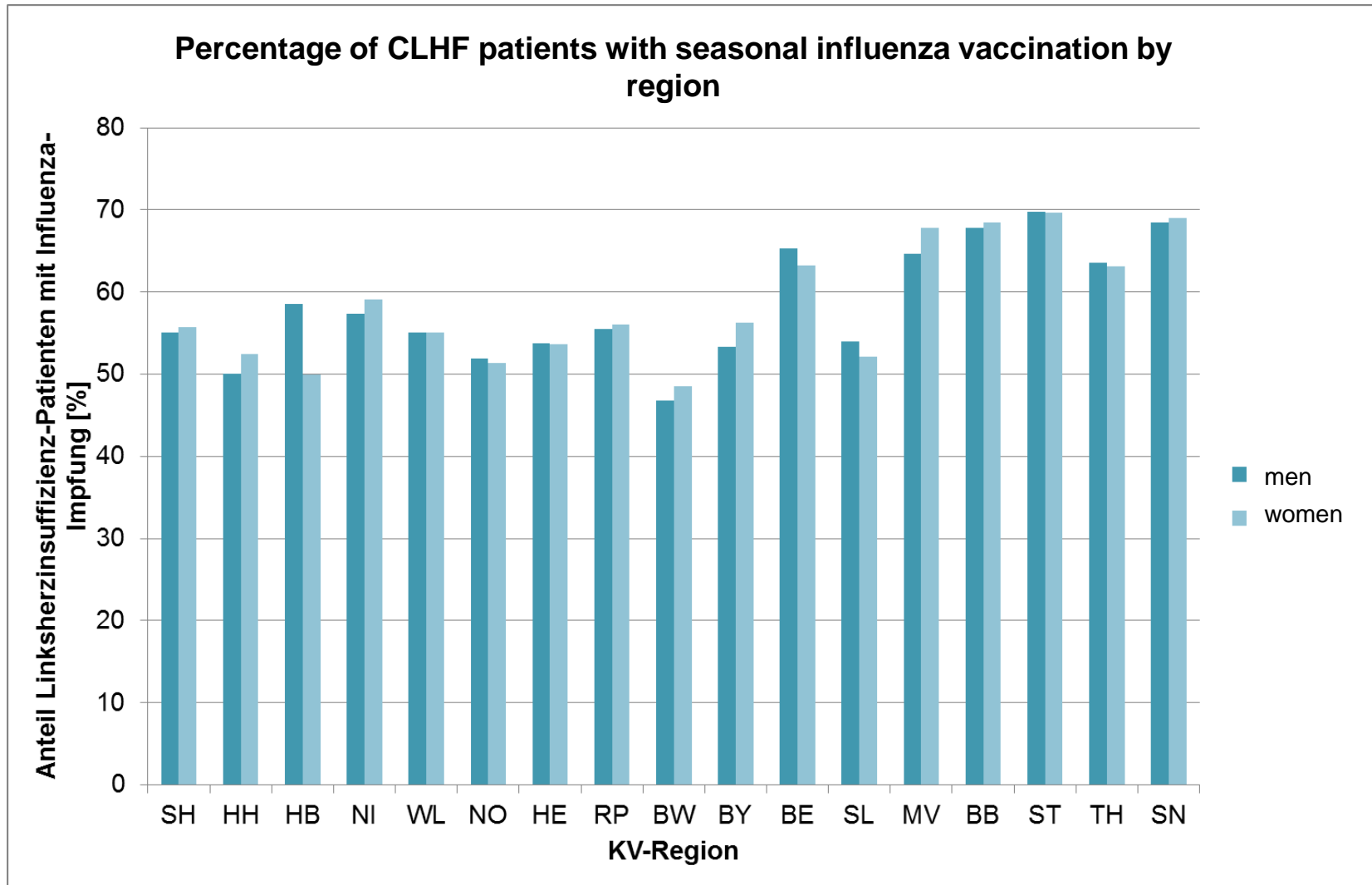
Seasonal Influenza Vaccination



According to the Standing Committee on Vaccination (STIKO) seasonal influenza vaccination is recommended nationally for the general population of ≥60 years)

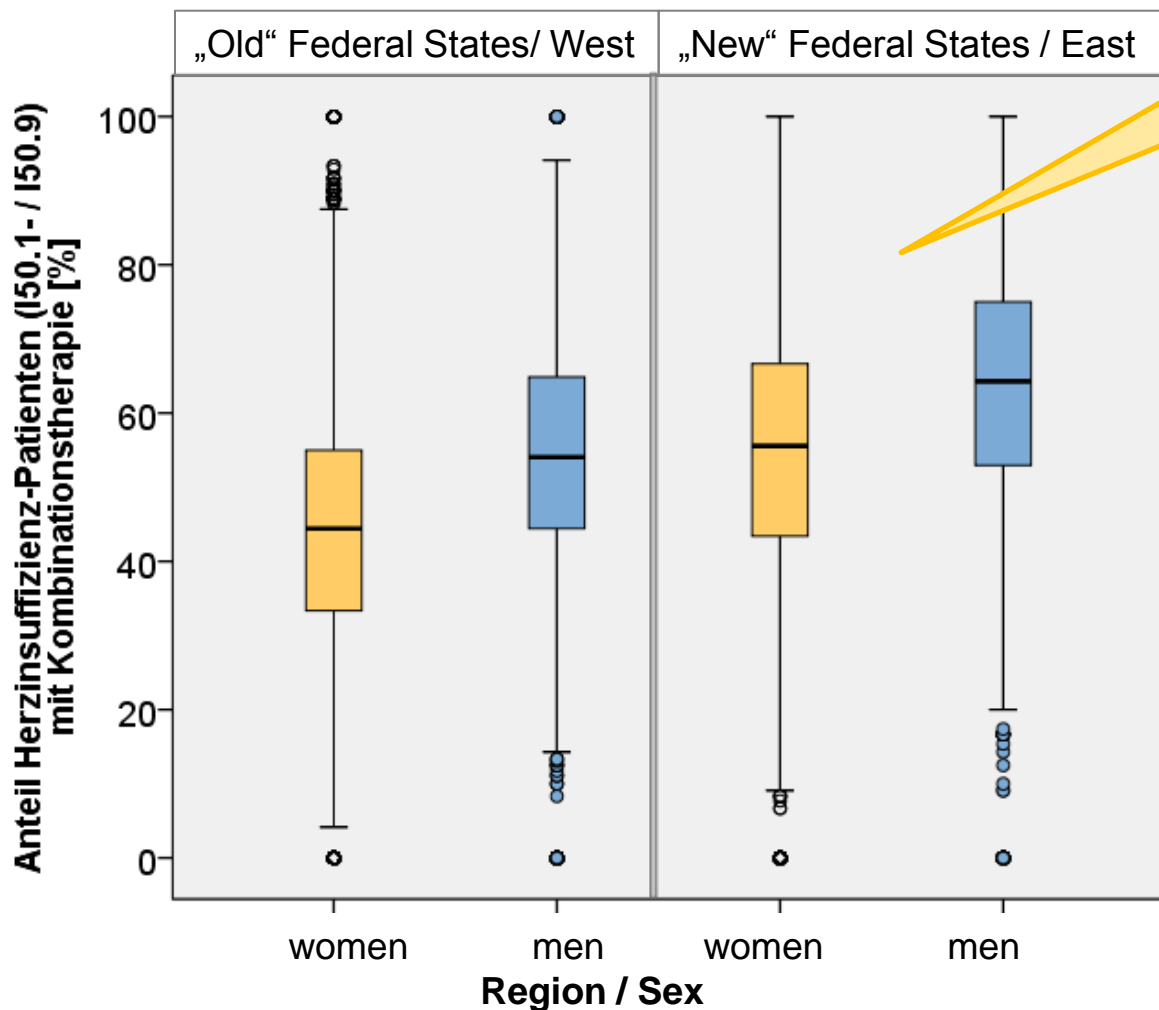
VDX-data 2009, N (CLHF) = 297.655 patients, I50.1- (M2Q)
N (GKV) = 38.082.084 patients

Seasonal Influenza Vaccination



VDX-data 2009, N = 297.655 patients, I50.1- (M2Q)

Percentage of CHF patients (I50.1 / I50.9 - M2Q) receiving a combination therapy by sex and regions (East / West)



- 1) Systematic variation
- 2) Individual variation
- 3) Regional effects

AVD/VDA-data 2011 (without WL)
I50.1 / I50.9

N men = 570.820 patients

N women = 818.707 patients

N virtual health service networks

West = 27.689

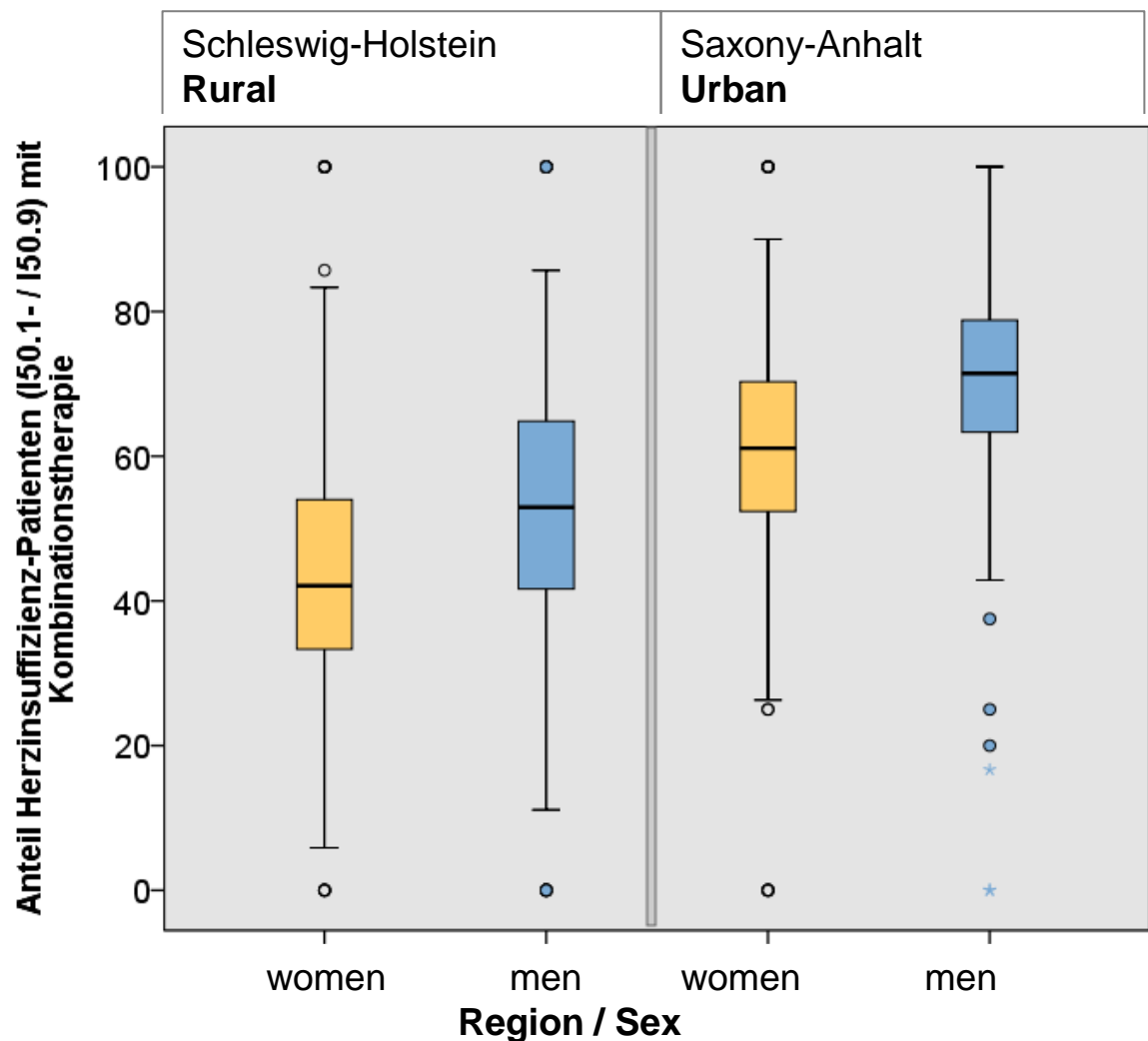
East = 6.859

Patients per functional population

West $38,7 \pm 36,3$ (Min = 1, Max = 724)

Ost $46,4 \pm 45,9$ (Min = 1, Max = 744)

Percentage of CHF patients (I50.1 / I50.9 - M2Q) receiving a combination therapy by sex and region (rural / urban)



AVD/ VDA-data2011

I50.1 / I50.9

N SH = 11.292 patients

N ST = 13.931 patients

N virtual health service networks

SH = 284

ST = 274

Patients per functional population

SH = $39,8 \pm 30,7$ (Min = 1, Max = 214)

ST = $50,8 \pm 47,6$ (Min = 1, Max = 573)



Logistic Regression Model

The chance to receive a combination therapy

- is significantly higher for patients with **co-morbidities** than for patients without co-morbidities (no interaction with the sex);
- rises with an increasing **polymedication** (no interaction with the sex);
- is **gender specific** (for men significantly higher than for women);
- is decreasing with increasing **age** (interaction with the sex);
- is 88% higher when the patient is treated additionally or exclusively by a **cardiologist** than just by a GP;
- depends on the **region** and is 19% lower for residents of the Western part of Germany.

Model accuracy: Acceptable with ROC-curve (0.716) and R-Square (0.201); all variables are highly significant ($p < 0.000$)

Conclusions

- **specific medication according to the guidelines is more often prescribed to CLHF patients when a cardiologist is involved**
- **male patients receive more often medication according to the guidelines.**
- **regional differences in the specific pharmacotherapy of CLHF**

In general the treatment options ACE inhibitors or AT1 antagonists, beta-blocker and the combination of both were prescribed more often in the Eastern part of Germany, with the highest rate in Mecklenburg-West Pomerania.
- **echocardiography is used more often in the “urban” Federal States**

Almost 75% of the patients in Hamburg and 65% in Berlin with suspected CLHF got an echocardiography, whereas in other Federal States the range was 35 and 50%.
- **chance to get the annually recommended seasonal influenza vaccination is higher in the Eastern part of Germany**

Open Questions?

- Do the existing guidelines sufficiently differentiate between men and women?
- To what extent do we have to accept doctors' individual treatment styles concerning guideline recommendations?
- Is it only supply effect or is there an effect from the demand side?
- What is the role of polymedication?
- How do we explain contradicting mortality and risk variations?
- When do we start to talk about unwanted variations?
- If so, how can we avoid unwanted regional variations?
- How do we best communicate with the physicians about unwanted variations?
- How do we get all other crucially involved players in one (?) boat?

**Thank you very much for your
attention**

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**Zentralinstitut für die kassenärztliche
Versorgung in Deutschland (Zi)**

Herbert-Lewin-Platz 3
10623 Berlin

Tel. +49 30 4005 2450

Fax +49 30 4005 2490

zi@zi.de

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