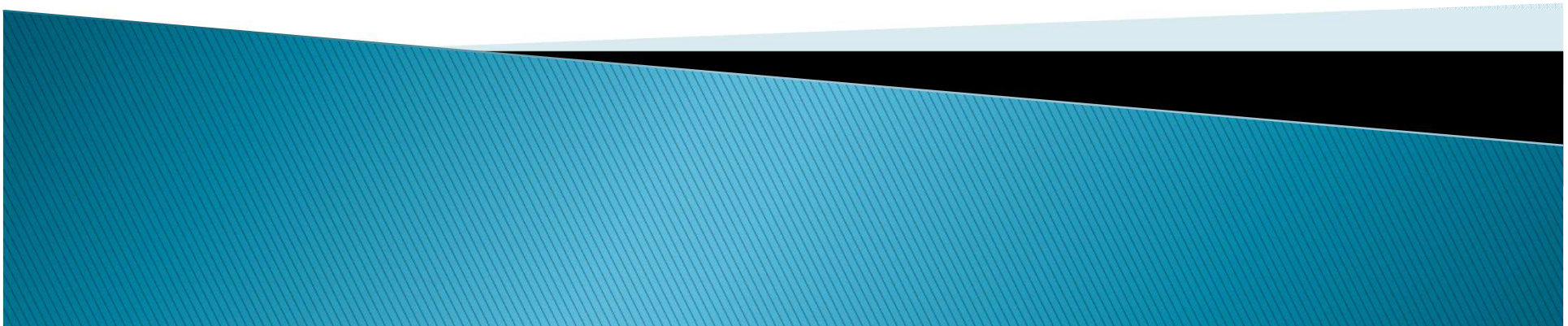




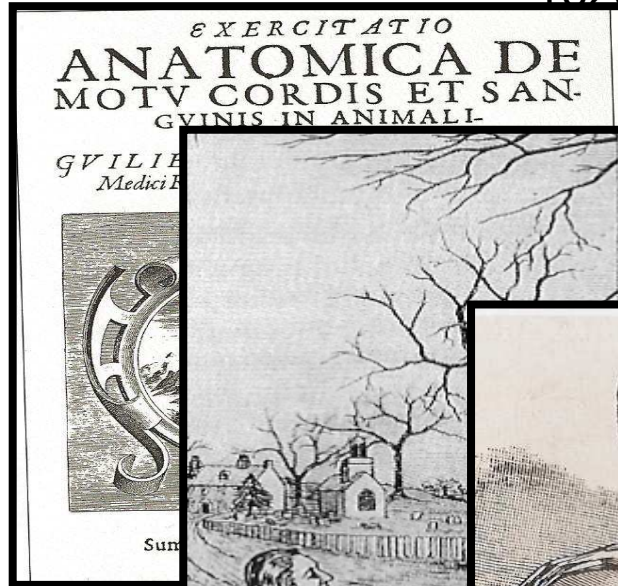
**4. ZENTRALSCHWEIZER  
KARDIOLOGIE SYMPOSIUM** 

# Der Patient mit arterieller Hypertonie

Thomas Kaeslin



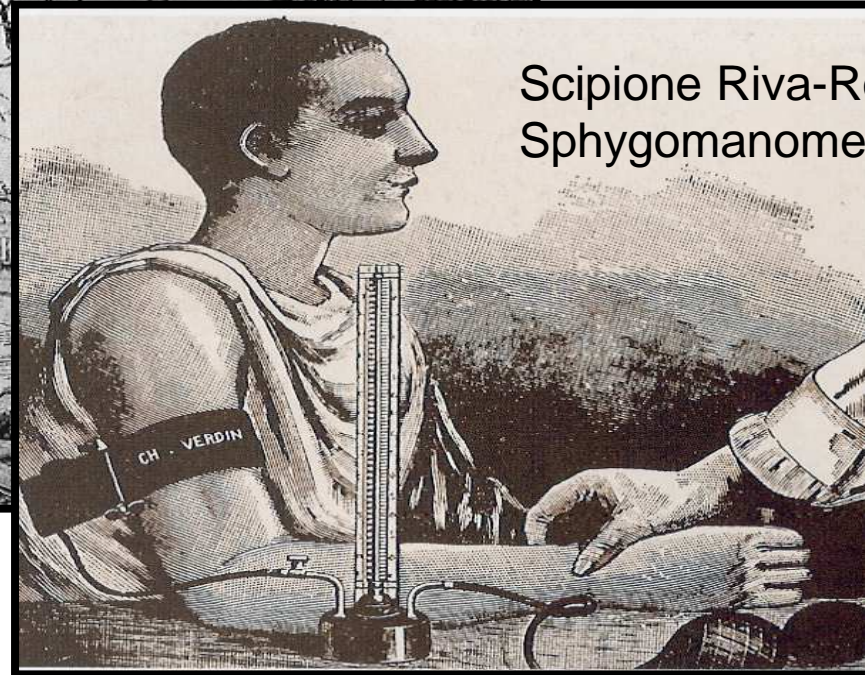
1628



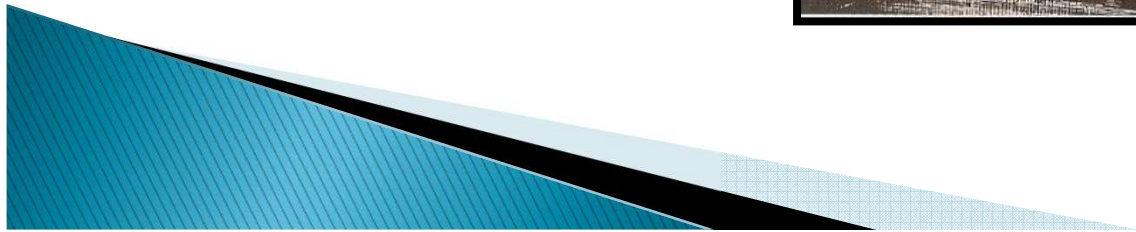
1769



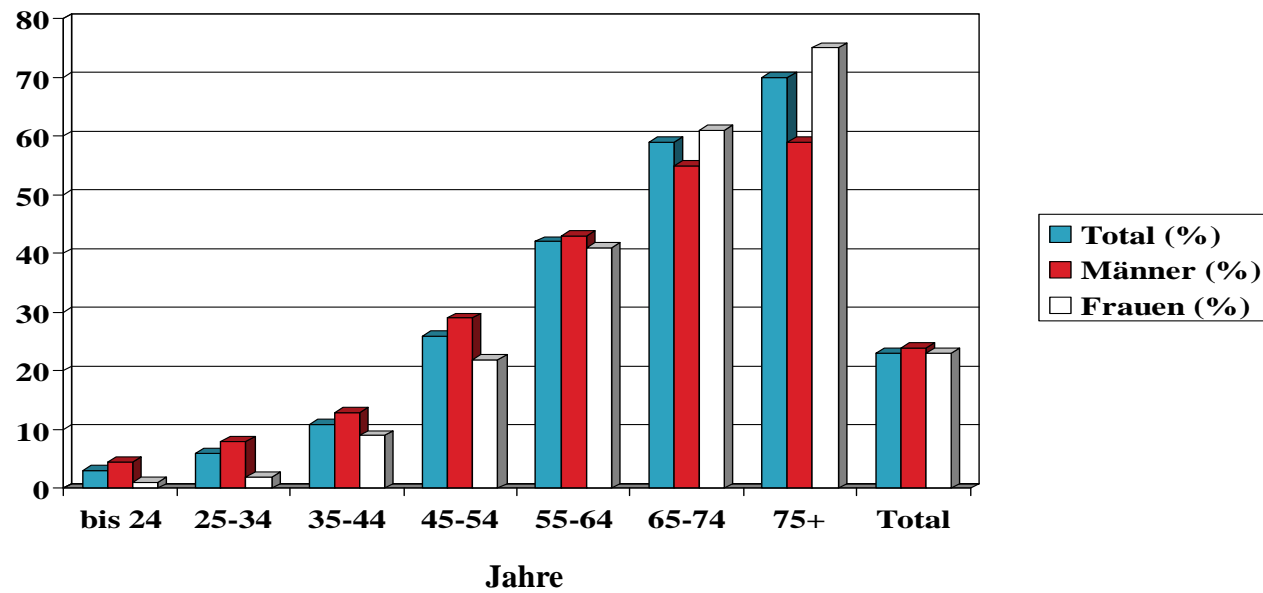
1896



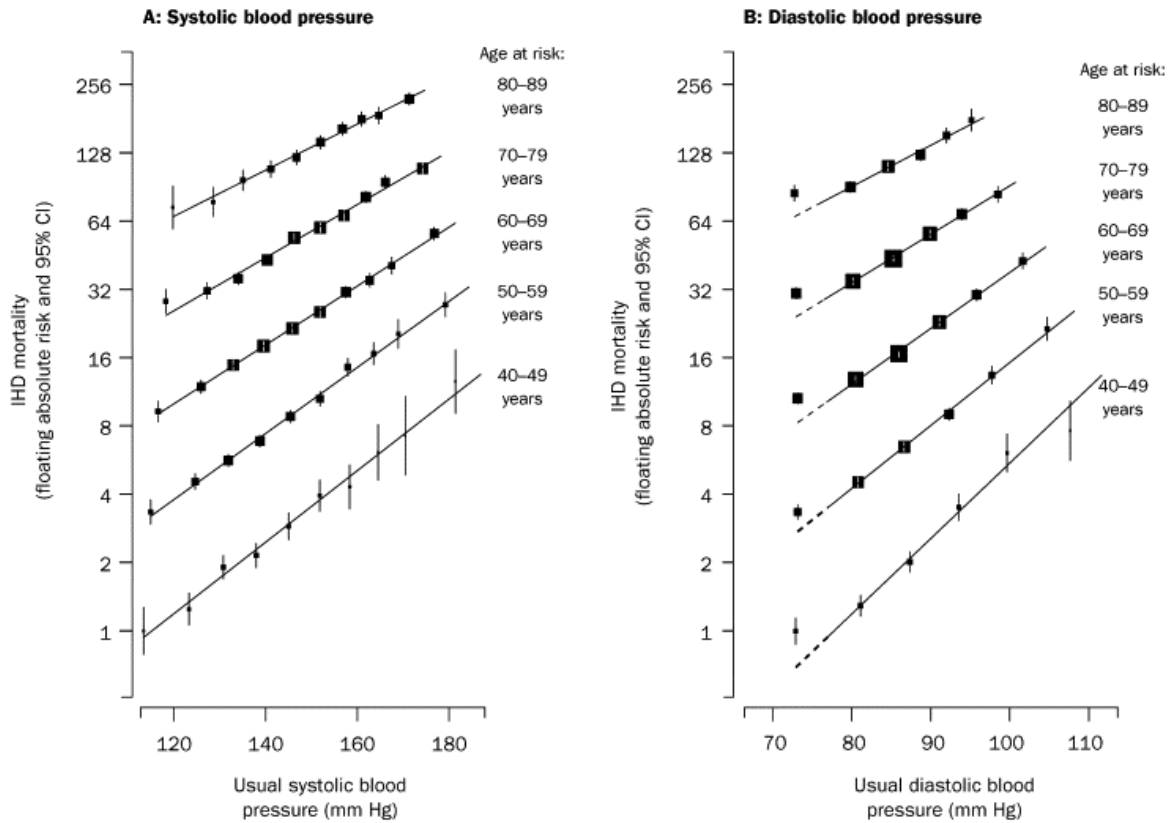
Scipione Riva-Rocci  
Sphygmomanometer



## Prävalenz der art. Hypertonie (CH)

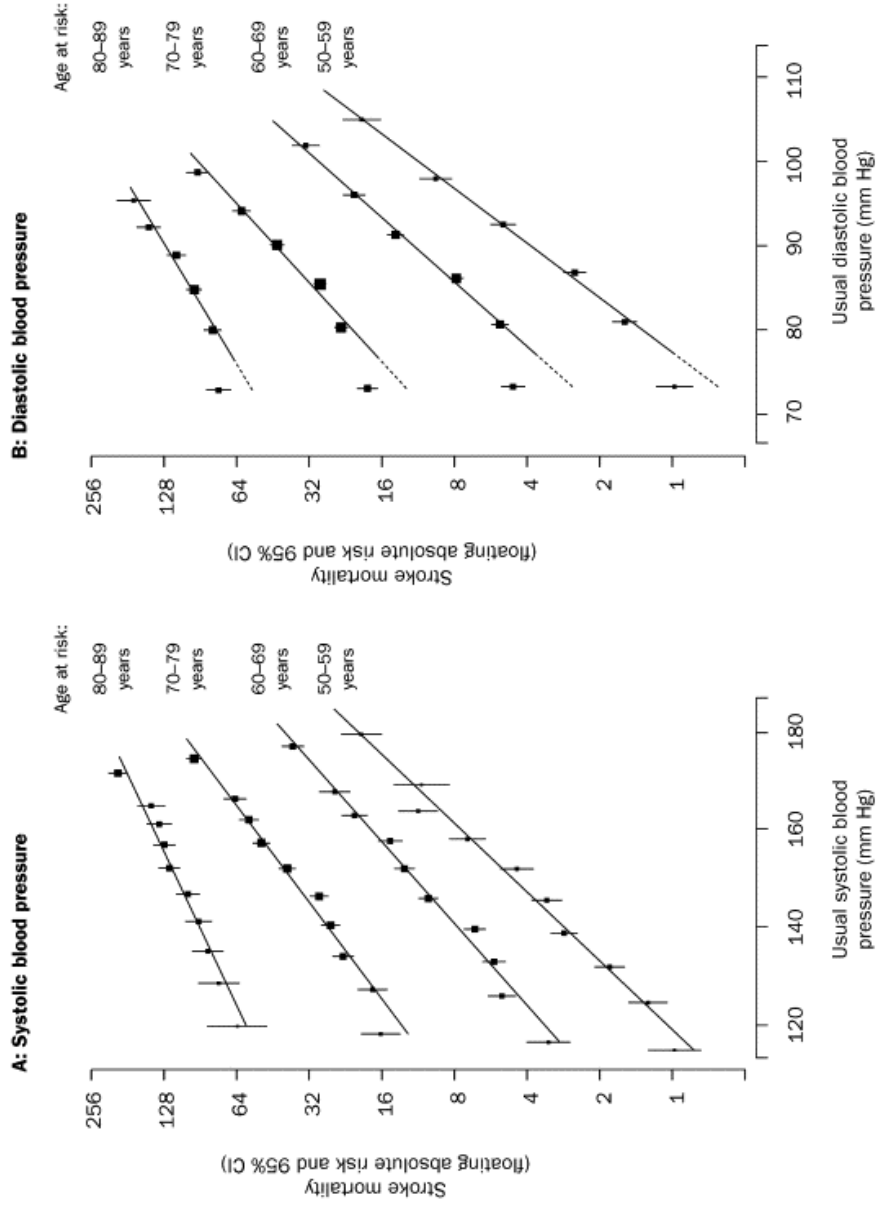


## Coronary heart disease mortality related to bloodpressure and age



Data from: *Prospective Studies Collaboration, Lancet 2002; 360:1903.*

# Stroke mortality related to bloodpressure and age

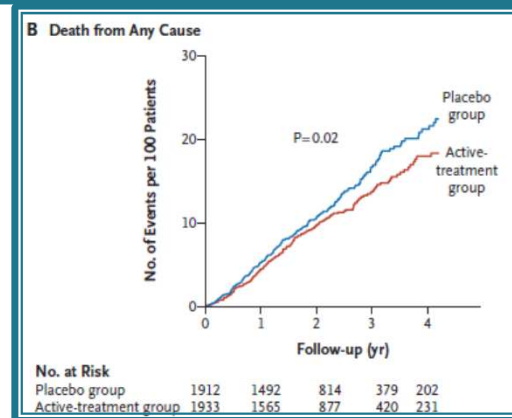
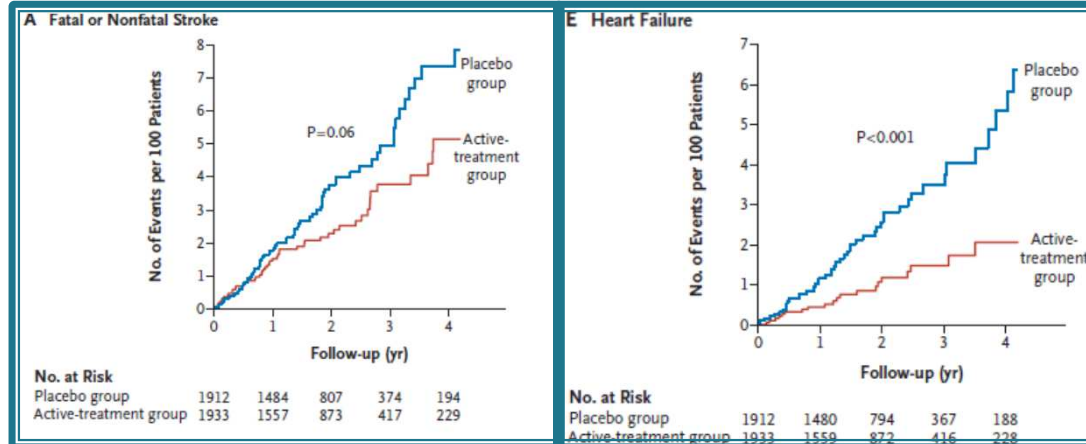


Data from: *Prospective Studies Collaboration, Lancet 2002; 360:1903.*



# Clinical trials

|                  |                     |  |   |
|------------------|---------------------|--|---|
| SHEP             | N = 4'376<br>> 65j  | Chlorthalidon vs<br>Placebo                        | Stroke (-36%)<br>CV-Risk (-34%)<br>Mortality (-13%)               |
| Syst-Eur         | N = 4'695<br>> 60j  | Nitrendipin ±<br>Enalapril/HCT<br>vs Placebo       | Stroke (-42%)<br>CV-Risk (-26%)<br>Mortality (-27%)               |
| Stop-<br>Hypert. | N = 6641<br>> 70j   | BB/Diuretica<br>vs ACE vs Ca-AG                    | Stroke (ACE/ Ca-AG<br>>BB)<br>CV-Mortality and CHF<br>similar     |
| ALLHAT           | N = 33'357<br>> 55j | Chlortalidon vs<br>Amlodipin/Lisinopril            | Chlortalidon ><br>ACE/Ca-AG in CHF,<br>Stroke and<br>CV-Risk      |
| HYVET            | N = 3'845<br>> 80j  | Indapamid ±<br>Perindopril vs<br>Placebo<br>ø 1,8j | Stroke (-30%)<br>CV-Risk (-34%)<br>Mortality (-21%)<br>CHF (-64%) |





KANTONSSPITAL  
OBWALDEN

# Fallbeispiele



# Fall 1: Frau M.V., 86j.

- ▶ Zuweisung wegen Schwindel unter antihypertensiver Therapie
- ▶ Anamnese: Tageszeitunabhängige Schwindelattacken und -Episoden, konsekutiv Stürze seit einigen Monaten
- ▶ PA:
  - Art. Hypertonie (ED 1973)
  - Biliäre Pancreatitis, Cholecystektomie 1982
  - Pneumonie 1994, Varikosis
  - Diabetes mellitus 2 (ED 1999, Diät)
  - KHK mit NSTEMI inferior (2007, LVH, EF 55%)
  - Restless legs Syndrom 2008
  - Radiusfraktur rechts 2009



### Klinischer Untersuchung:

Ordentlicher AZ, 152cm, 68kg (BMI 29,4),  
BD 144/72 mmHg re, Puls 58 bpm, regelmässig.  
C/P-kompensiert, leises 2/6 syst. AG über  
Aorta, kein Carotisstenosegeräusch, normale  
Pulsqualität. Fusspulse nicht palpabel.  
Eingeschränkter peripherer Vibrationssinn,  
ansonsten neurologisch unauffällig.



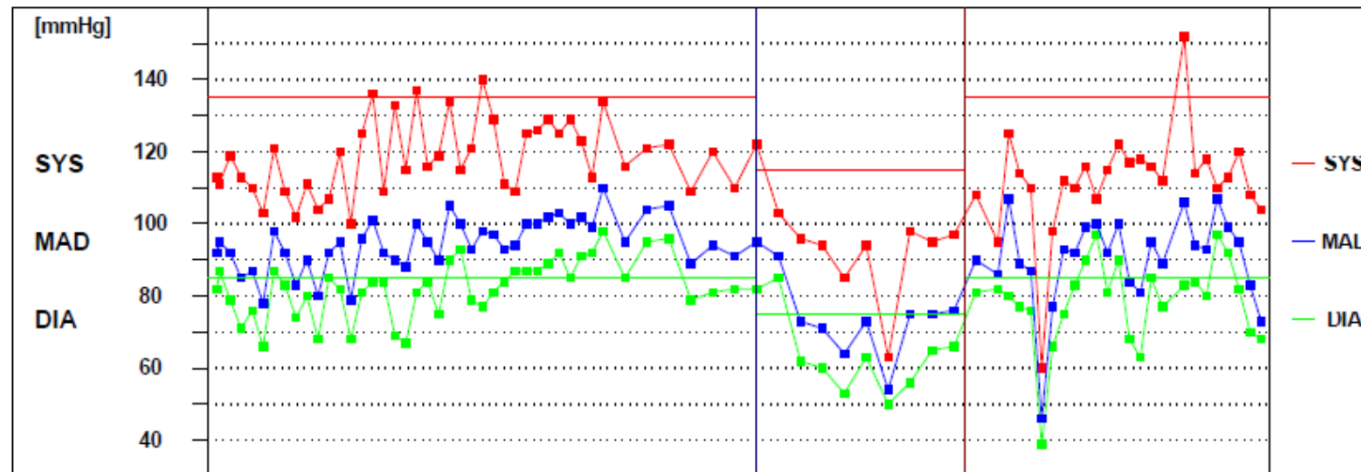
- ▶ SA: Keine AP, AD NYHA II, Schwindel.  
Keine Herzinsuffizienzsymptome
  
- ▶ Medikamente:
  - Lisinopril/HCT 20/12,5mg
  - Bisoprolol 5mg
  - ASS 100mg
  - Venoruton forte
  - Nitrodur 10 TTS
  - Pramipexol (Sifrol) 0,5mg
  - Tebokan 80 (Ginko)
  - Cinnarizin (Stugeron) 150mg



- ▶ Labor: Elektrolyte und Hämatologie normal,  
Krea 108  $\mu\text{mol/L}$  (N < 84),  
TSH 0,9  $\text{uIU/ml}$  (N: 0,25–5)  
BZ 7,9  $\text{mmol/L}$ , HbA1c 6,9%,  
UST und Sediment normal
- ▶ EKG: NK SR, LL, normale Abschnittszeiten,  
ST–Streckensenkung lateral  
vereinbar mit LVH. IVRLS inferior.
- ▶ Holter–EKG: Keine Bradykardien, keine AV–  
Überleitungsstörungen, keine relevanten  
Rhythmusstörungen



# 24h-BD-Profil



  
Schwindel



- ▶ Sitzender BD: 144/78 mmHg
- ▶ Stehender BD: 108/64 mmHg
  
- ▶ Orthostatische Hypotension:
  - Strenge Korrelation mit Stürzen, Frakturen und vorzeitigem Tod
  - BD-Medi,  $\alpha$ -Blocker, Nitrate, Parkinsonmittel
  - Autonome Dysregulation (DM, Parkinson)
  - Alter (7% bei >70J)



- ▶ Therapie:
  - Pramipexol und Nitrate gestoppt (Venoruton, Cinnarizin, Tebokan ebenfalls)
  - ACEH/HCT halbiert
  
- ▶ Kontrolle nach 2 Wochen:
  - BD liegend 140/74 mmHg
  - BD stehend 132/70 mmHg

Kaum mehr Schwindel, keine Stürze mehr!

Empfehlung: BD-Kontrollen im Stehen, va bei älteren Patienten.





## 2. Fall



## Fall 2: Herr A.vR. 48j.

- ▶ Zuweisung wegen arterieller Hypertonie und Frage nach Therapieindikation
- ▶ Anamnese: Beschwerdefrei, Zufallsbefund
- ▶ PA: Skisturz mit Humerusfraktur rechts 2011

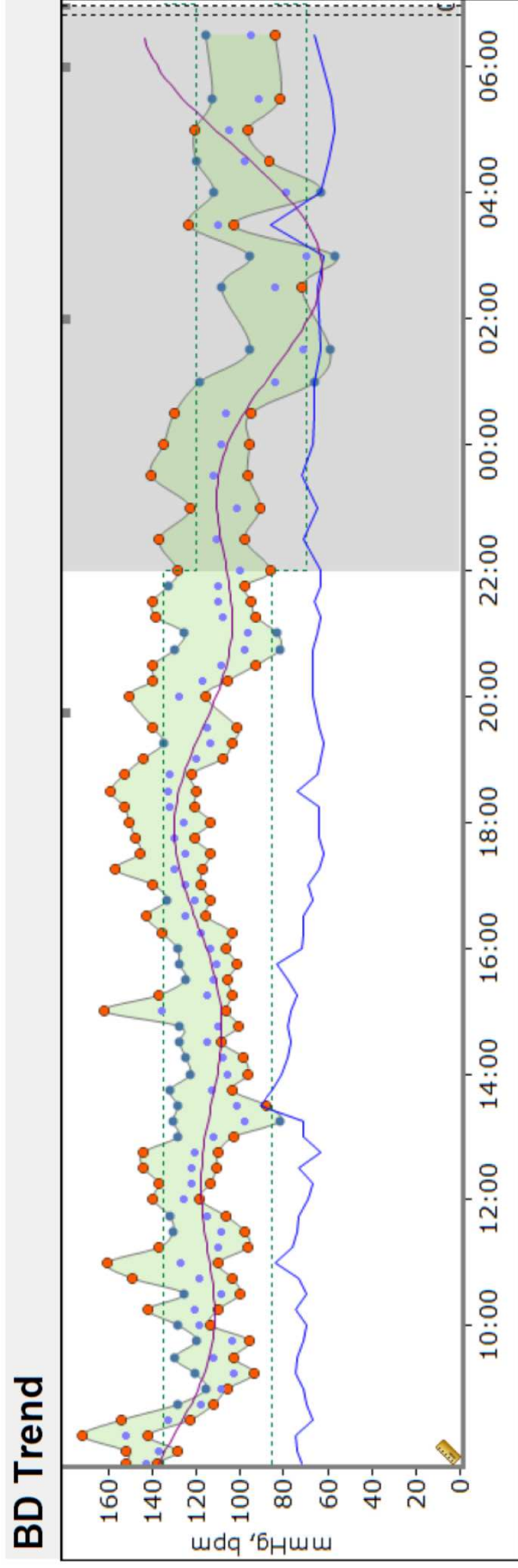


## ▶ Diagnose sichern:

- Sitzend, in Ruhe (3–5') in  $\geq 2$  Visiten
- Manchettengrösse (OA > 33cm)
- 3 Messungen ( $\emptyset$  von 2 und 3)
- 1x beidseits messen, höherer Wert nehmen!
- Cuff immer auf Herzhöhe
- Ältere Patienten: sitzend + stehend messen
- Messgeräte überprüfen
- Heimmessungen, 24h-BD-Profil

Lebenslange Therapie braucht sichere  
Diagnostik

# 24h-Blutdruckprofil



# Basis-Abklärung

- ▶ Familienanamnese
- ▶ Persönliche Anamnese
- ▶ Klinischer Status
- ▶ Kardiovaskuläre Risikofaktoren
- ▶ Basis-Labor: Blutbild, BZ, Lipidstatus, Na, K, Krea, GFR, Harnsäure, UST, Mikroalbuminurie
- ▶ EKG



# Endorganschäden suchen

- ▶ Atherosklerose
- ▶ Linksventrikuläre Hypertrophie
- ▶ Mikroalbuminämie, Proteinurie
- ▶ Verminderte GFR
- ▶ Fundus hypertonicus



## **Individuals at higher CV risk - Summary**

Population at higher CV risk than indicated in stratification chart:

- Sedentary subjects and those with central obesity
- Socially deprived subjects and those from ethnic minorities
- Subjects with elevated FPG and/or abnormal glucose tolerance test\*
- Persons with increased TG, fibrinogen, apoB, lp(a), hs-CRP
- Individuals with family history of premature CVD<sup>^</sup>



| Other risk factors,<br>asymptomatic organ damage<br>or disease | Blood Pressure (mmHg)                      |   |   |                                       |
|--|--|---|---|---------------------------------------|
|  | High normal<br>SBP 130–139<br>or DBP 85–89 | Grade 1 HT<br>SBP 140–159<br>or DBP 90–99 | Grade 2 HT<br>SBP 160–179<br>or DBP 100–109 | Grade 3 HT<br>SBP ≥180<br>or DBP ≥110 |
| No other RF  |  | Low risk                                  | Moderate risk                               | High risk                             |
| 1–2 RF   | Low risk                                   | Moderate risk                             | Moderate to high risk                       | High risk                             |
| ≥3 RF  | Low to Moderate risk                       | Moderate to high risk                     | High Risk                                   | High risk                             |
| OD, CKD stage 3 or diabetes                                    | Moderate to high risk                      | High risk                                 | High risk                                   | High to very high risk                |
| Symptomatic CVD, CKD stage ≥4 or diabetes with OD/RFs          | Very high risk                             | Very high risk                            | Very high risk                              | Very high risk                        |

BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular; CVD = cardiovascular disease; DBP = diastolic blood pressure; HT = hypertension; OD = organ damage; RF = risk factor; SBP = systolic blood pressure.

**Figure 1** Stratification of total CV risk in categories of low, moderate, high and very high risk according to SBP and DBP and prevalence of RFs, asymptomatic OD, diabetes, CKD stage or symptomatic CVD. Subjects with a high normal office but a raised out-of-office BP (masked hypertension) have a CV risk in the hypertension range. Subjects with a high office BP but normal out-of-office BP (white-coat hypertension), particularly if there is no diabetes, OD, CVD or CKD, have lower risk than sustained hypertension for the same office BP.

cv 10-Jahresrisiko

leicht
  mittel
  hoch
  sehr hoch



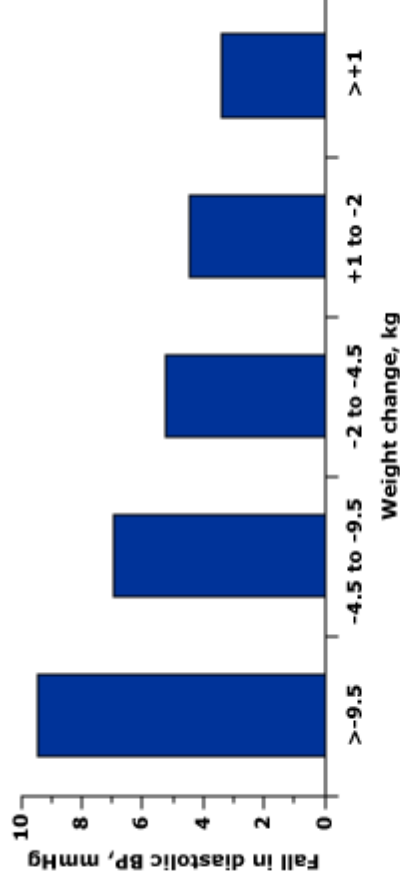
| Other risk factors, asymptomatic organ damage or disease | Blood Pressure (mmHg)   |  |   |  |
|--|---|--|---|--|
|  | High normal<br>SBP 130–139<br>or DBP 85–89  | Grade 1 HT<br>SBP 140–159<br>or DBP 90–99  | Grade 2 HT<br>SBP 160–179<br>or DBP 100–109   | Grade 3 HT<br>SBP ≥180<br>or DBP ≥110  |
| No other RF  | <ul style="list-style-type: none"> <li>No BP intervention</li> </ul>                            | <ul style="list-style-type: none"> <li>Lifestyle changes for several months</li> <li>Then add BP drugs targeting &lt;140/90</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes for several weeks</li> <li>Then add BP drugs targeting &lt;140/90</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>Immediate BP drugs targeting &lt;140/90</li> </ul> |
| 1–2 RF   | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>No BP intervention</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes for several weeks</li> <li>Then add BP drugs targeting &lt;140/90</li> </ul>  | <ul style="list-style-type: none"> <li>Lifestyle changes for several weeks</li> <li>Then add BP drugs targeting &lt;140/90</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>Immediate BP drugs targeting &lt;140/90</li> </ul> |
| ≥3 RF  | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>No BP intervention</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes for several weeks</li> <li>Then add BP drugs targeting &lt;140/90</li> </ul>  | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>BP drugs targeting &lt;140/90</li> </ul>                            | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>Immediate BP drugs targeting &lt;140/90</li> </ul> |
| OD, CKD stage 3 or diabetes                              | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>No BP intervention</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>BP drugs targeting &lt;140/90</li> </ul>                             | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>BP drugs targeting &lt;140/90</li> </ul>                            | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>Immediate BP drugs targeting &lt;140/90</li> </ul> |
| Symptomatic CVD, CKD stage ≥4 or diabetes with OD/RFs    | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>No BP intervention</li> </ul> | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>BP drugs targeting &lt;140/90</li> </ul>                             | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>BP drugs targeting &lt;140/90</li> </ul>                            | <ul style="list-style-type: none"> <li>Lifestyle changes</li> <li>Immediate BP drugs targeting &lt;140/90</li> </ul> |

BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular disease; DBP = diastolic blood pressure; HT = hypertension; OD = organ damage; RF = risk factor; SBP = systolic blood pressure.

**Figure 2** Initiation of lifestyle changes and antihypertensive drug treatment. Targets of treatment are also indicated. Colours are as in Figure 1. Consult Section 6.6 for evidence that, in patients with diabetes, the optimal DBP target is between 80 and 85 mmHg. In the high normal BP range, drug treatment should be considered in the presence of a raised out-of-office BP (masked hypertension). Consult section 4.2.4 for lack of evidence in favour of drug treatment in young individuals with isolated systolic hypertension.



## Weight loss-induced reduction in diastolic blood pressure



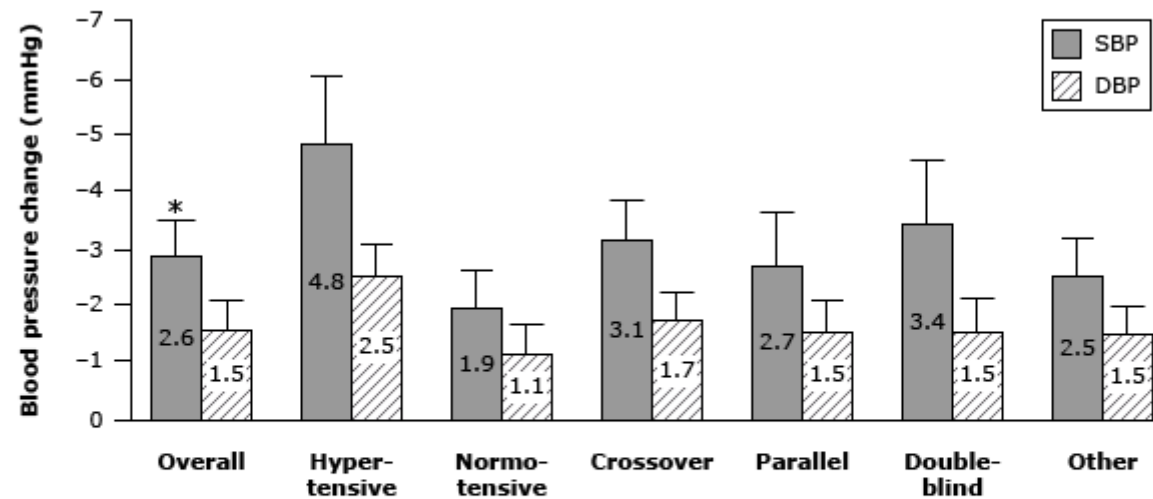
Relationship between the quantity of weight lost and the fall in diastolic blood pressure in 308 moderately obese patients given a weight reduction regimen for 18 months. The patients began with a diastolic pressure between 80 and 89 mmHg; those who lost the most weight had the largest reduction in diastolic pressure. The decreases in the systolic pressure were similar.

BP: blood pressure.

Data from: Stevens VJ, Corrigan SA, Obarzanek E, et al. Weight loss intervention in phase 1 of the Trials of Hypertension Prevention. The TOHP Collaborative Research Group. *Arch Intern Med* 1993; 153:849. UpToDate®

# Was ist mit life-style Modifikation?

## Blood pressure change and sodium reduction



Pooled results from all sodium-reduction trials concerning the mean net change in blood pressure due to restrictions in sodium intake among various subsets of patients.

SBP: systolic blood pressure; DBP: diastolic blood pressure.

\* The mean change is compared with control values.

Data from: Cutler JA, Follmann D, Allender PS. *Am J Clin Nutr* 1997; 65:643S.

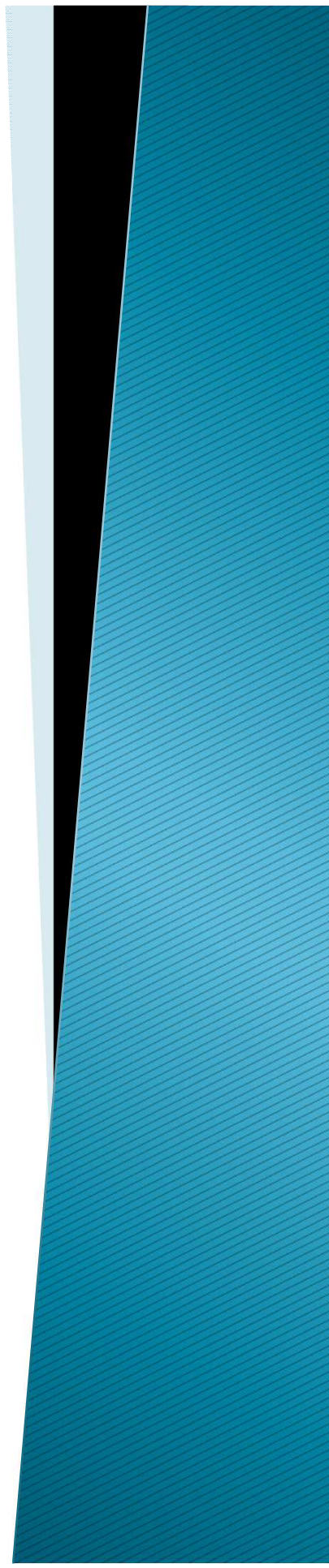
## Lifestyle modifications in the management of hypertension

| Modification                      | Recommendation  | Approximate systolic BP reduction, range* |
|-----------------------------------|---|---|
| Weight reduction                  | Maintain normal body weight (BMI, 18.5 to 24.9 kg/m <sup>2</sup> )  | 5 to 20 mmHg per 10 kg weight loss        |
| Adopt DASH eating plan            | Consume a diet rich in fruits, vegetables, and low-fat dairy products with a reduced content of saturated and total fat             | 8 to 14 mmHg                              |
| Dietary sodium reduction          | Reduce dietary sodium intake to no more than 100 meq/day (2.4 g sodium or 6 g sodium chloride)                                      | 2 to 8 mmHg                               |
| Physical activity                 | Engage in regular aerobic physical activity such as brisk walking (at least 30 minutes per day, most days of the week)              | 4 to 9 mmHg                               |
| Moderation of alcohol consumption | Limit consumption to no more than 2 drinks per day in most men and no more than 1 drink per day in women and lighter-weight persons | 2 to 4 mmHg                               |

The seventh report of the Joint national committee on prevention, detection, evaluation and treatment of hiht blood pressure



**Behandlungsziel ?**

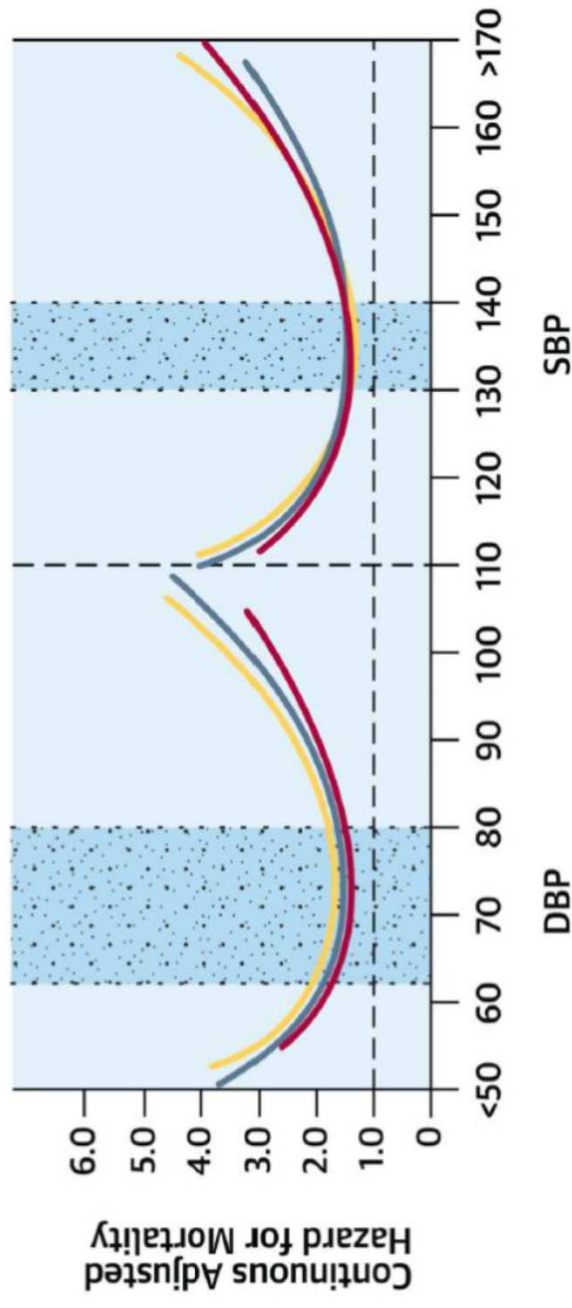


## Blood pressure goals in hypertensive patients

| Recommendations   |              |
|---|--------------|
| <b>SBP goal for “most”</b> <ul style="list-style-type: none"><li>•Patients at low–moderate CV risk</li><li>•Patients with diabetes</li><li>•Consider with previous stroke or TIA</li><li>•Consider with CHD</li><li>•Consider with diabetic or non-diabetic CKD</li></ul> | <140 mmHg    |
| <b>SBP goal for elderly</b> <ul style="list-style-type: none"><li>•Ages &lt;80 years</li><li>•Initial SBP <math>\geq</math>160 mmHg</li></ul>   | 140-150 mmHg |
| <b>SBP goal for fit elderly</b><br>Aged <80 years   | <140 mmHg    |
| <b>SBP goal for elderly &gt;80 years with SBP</b><br>• $\geq$ 160 mmHg  | 140-150 mmHg |
| <b>DBP goal for “most”</b>  | <90 mmHg     |
| <b>DB goal for patients with diabetes</b>   | <85 mmHg     |



# Hypertonie: Zielwerte



Sim JACC 2014; 12,64: 588

-> retrospektive Kohortenstudie, knapp 400000 Hypertoniker

# Therapieziel: alles klar oder ?

**ACCORD** NEJM 2010, 210;362:1575

The NEW ENGLAND  
JOURNAL of MEDICINE

Effects of Intensive Blood-Pressure Control  
in Type 2 Diabetes Mellitus

- ▶ 4733 DM II 1:1 rand. in intensiv (<120mmHg) vs standard (<140mmHg)
- ▶ Ausschluss:
  - Krea >130, BMI >45
- ▶ Resultate:
  - RR 119 vs 133 mmHg
  - Pep (CVE) 1,9 vs 2,1 %

**SPRINT** NEJM 2015, 373;22:2103

The NEW ENGLAND  
JOURNAL of MEDICINE

A Randomized Trial of Intensive versus  
Standard Blood-Pressure Control

- ▶ 9360 Pat. 1:1 rand. in intensiv (<120mmHg vs standard (<140 mmHg)
- ▶ Einschluss:
  - RR >130 mmHg + > 50J.
  - +zusätzlicher RF (PAVK, CKD, >75j, cvRisc >15%
- ▶ Ausschluss: DM, Stroke, resist. HT
- ▶ Resultate: RRR 33% in CVE, allcause death 25%, alle Subgruppen

# Zum nach Hause nehmen:

- ▶ Häufige Diagnose, richtig erkennen
- ▶ Risikostratifizierung vor einer Therapie
- ▶ Life-style-modifikation
- ▶ Motivation, Arzt als Droge
- ▶ Tief dosieren und geschickt kombinieren
- ▶ Junge, gesündere Patienten aggressiver einstellen
- ▶ Interaktionen vermeiden
- ▶ Compliance regelmässig überprüfen
- ▶ Bei Resistenz Xenalon® dazugeben

<http://www.swisshypertension.ch>





**4. ZENTRALSCHWEIZER  
KARDIOLOGIE SYMPOSIUM**



**Fragen?**

