Kardiovaskuläre Prävention: Rolle der Polypill

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Kardiovaskuläre Erkrankungen…

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https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)

1) Häufigste Todesursache weltweit

2) 2016: ca. 17,9 Mio Tote (entsprechend 31 % aller Tode)

3) ¾ der Todesfälle ereignet sich in mittel- und niedrig –Einkommensländern

Kardiovaskuläre Prävention

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European Heart Journal
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JOINT ESC GUIDELINES

2016 European Guidelines on cardiovascular disease prevention in clinical practice

The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts)

ACC/AHA Prevention Guideline

OPEN

2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Society for Preventive Cardiology, American Society of Hypertension, Association of Black Cardiologists, National Lipid Association, Preventive Cardiovascular Nurses Association, and WomenHeart: The National Coalition for Women With Heart Disease

Circulation June 24, 2014

- **Blutdruck**
- **Blutfette**
- **Thrombozytenfunktionshemmung**
- Gewichtskontrolle / Ernährung
- Blutzuckereinstellung
- Nikotinkarenz

Blutdruckmanagement – korrektes Messen

ESC European Society of Cardiology
ESC/ESH GUIDELINES
2018 ESC/ESH Guidelines for the management of arterial hypertension
The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH)

- Evaluierung: **Blutdruckmessung in Praxis**
  - 5 Minuten sitzend in ruhiger Umgebung
  - 3 Messungen im Abstand von 1-2 Minuten
  - Cave bei Arrhythmien (falsche Ergebnisse mit automatischen Geräten)
  - Bei erster Messung: beide Seiten verwenden. *Zukünftige Messungen nur auf der höheren Seite*
- **Messungen zu Hause**
  - Blutdruckpass (Papier oder elektronisch)
  - Patienten animieren zumindest 7 Tage vor Arztbesuch zu messen (morgens und abends)
  - Schulung: nach 5 Minuten sitzend in ruhiger Umgebung
- **24-Stunden Blutdruckmessung**
  - Zumindest 70 % gültige Messungen -> verwertbar
  - Nächtlicher Blutdruck: gute Risikoabschätzung

Table 9 Definitions of hypertension according to office, ambulatory, and home blood pressure levels

Category	SBP (mmHg)		DBP (mmHg)
Office BP[a]	≥140	and/or	≥90
Ambulatory BP			
Daytime (or awake) mean	≥135	and/or	≥85
Night-time (or asleep) mean	≥120	and/or	≥70
24 h mean	≥130	and/or	≥80
Home BP mean	≥135	and/or	≥85

BP = blood pressure; DBP = diastolic blood pressure; SBP = systolic blood pressure.
[a]Refers to conventional office BP rather than unattended office BP.

Blutdruckmanagement – Hypertonie

ESC European Society of Cardiology
European Heart Journal (2018) 39, 3021–3104
doi:10.1093/eurheartj/ehy339
ESC/ESH GUIDELINES

2018 ESC/ESH Guidelines for the management of arterial hypertension

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- Individuelle Strategie zur Diagnosesicherung
  - Selbstmessungen, 24-Stunden Messung, Praxismessungen
- Follow-ups richten sich nach Ausgangsblutdruck (je höher RR, desto kurzfristiger)
- Einteilung in **optimal, normal, hochnormal** und **Grad 1-3 Hypertonie**

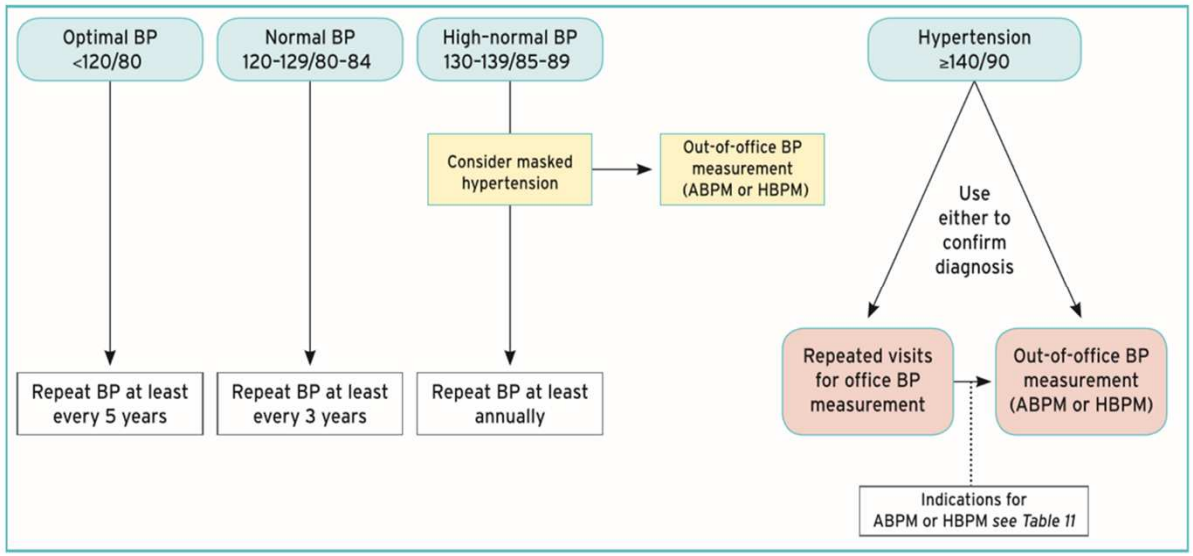

Table 3 Classification of office blood pressure[a] and definitions of hypertension grade[b]

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension[b]	≥140	and	<90

BP = blood pressure; SBP = systolic blood pressure.
[a]BP category is defined according to seated clinic BP and by the highest level of BP, whether systolic or diastolic.
[b]Isolated systolic hypertension is graded 1, 2, or 3 according to SBP values in the ranges indicated.
The same classification is used for all ages from 16 years.

Blutdruckmanagement – Therapiebeginn?

- Einteilung in Risikogruppen:
  - bestehende CV-Erkrankung?

- **Bei hohem Risko** oder **Grad 2/3 Hypertonie** (RR syst > 160 mmHg)
  - Lifestylemodifikation
  - **Sofortiger Therapiebeginn**

- **Bei niedrigem Risiko** und **Grad 1 Hyprtonie** (RR syst > 140 mmHg)
  - Liefestylemodifikation
  - **Therapie erst nach 3-6 Monaten**

- Bei Patienten mit **hohem Risiko** und **RR syst > 130 mmHg < 140 mmHg**
  - Klasse IIb-Empfehlung für med. Therapie

- Bei Patienten über 80 Jahre
  - Therapiebeginn erst ab RR syst > 160 mmHg

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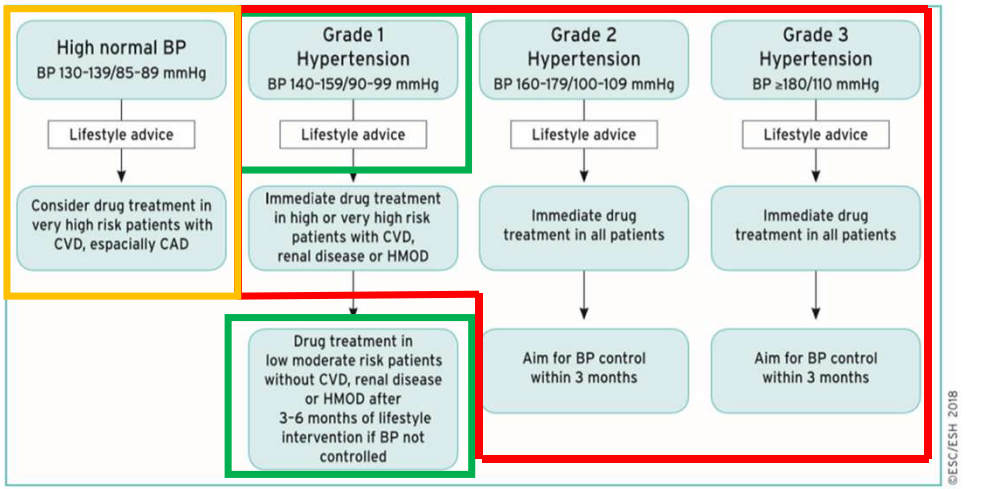

Initiation of hypertension treatment according to office BP

Recommendations	Class[a]	Level[b]
Prompt initiation of BP-lowering drug treatment is recommended in patients with grade 2 or 3 hypertension at any level of CV risk, simultaneous with the initiation of lifestyle changes.[2,8]	I	A
In patients with grade 1 hypertension: • Lifestyle interventions are recommended to determine if this will normalize BP.[219]	II	B
• In patients with grade 1 hypertension at low–moderate-risk and without evidence of HMOD, BP-lowering drug treatment is recommended if the patient remains hypertensive after a period of lifestyle intervention.[211,212]	I	A
• In patients with grade 1 hypertension and at high risk or with evidence of HMOD, prompt initiation of drug treatment is recommended simultaneously with lifestyle interventions.[211,212]	I	A
In fit older patients with hypertension (even if aged >80 years), BP-lowering drug treatment and lifestyle intervention are recommended when SBP is ≥160 mmHg.[210,220,221]	I	A
BP-lowering drug treatment and lifestyle intervention are recommended for fit older patients (>65 years but not >80 years) when SBP is in the grade 1 range (140–159 mmHg), provided that treatment is well tolerated.[212]	I	A
Antihypertensive treatment may also be considered in frail older patients if tolerated.[215]	IIb	B
Withdrawal of BP-lowering drug treatment on the basis of age, even when patients attain an age of ≥80 years, is not recommended, provided that treatment is well tolerated.[213]	III	A
In patients with high–normal BP (130–139/85–89 mmHg): • Lifestyle changes are recommended.[17,35]	I	A
• Drug treatment may be considered when their CV is very high due to established CVD, especially CAD.[217]	IIb	A

Blutdruckmanagement - Therapieziel

1)

- **Alle the**
  - **Ziel <**

2)

- Bei Alte
  vorhand
  - Ziel s
- Bei Alte
  - Ziel s
- Diastoli
  - Ziel < 80 mmHg für alle Patienten (IIa)

Office BP treatment targets in hypertensive patients

Table 23 Office blood pressure treatment target range

Age group	Office SBP treatment target ranges (mmHg)					Office DBP treatment target range (mmHg)
	Hypertension	+ Diabetes	+ CKD	+ CAD	+ Stroke[a]/TIA	
18 - 65 years	**Target to 130** *or lower if tolerated* Not <120	**Target to 130** *or lower if tolerated* Not <120	**Target to <140 to 130** *if tolerated*	**Target to 130** *or lower if tolerated* Not <120	**Target to 130** *or lower if tolerated* Not <120	70–79
65 - 79 years[b]	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	70–79
≥80 years[b]	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	**Target to 130-139** *if tolerated*	70–79
Office DBP treatment target range (mmHg)	70–79	70–79	70–79	70–79	70–79	

CAD = coronary artery disease; CKD = chronic kidney disease (includes diabetic and non-diabetic CKD); DBP = diastolic blood pressure; SBP = systolic blood pressure; TIA = transient ischaemic attack.
[a]Refers to patients with previous stroke and does not refer to blood pressure targets immediately after acute stroke.
[b]Treatment decisions and blood pressure targets may need to be modified in older patients who are frail and independent.

	Class[a]	Level[b]
ve of 40/ hat BP nHg	I	A
ring ıld	I	A
ving e	I	A
s	I	C
atients	I	A
nsid- dent s	IIa	B

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= cardiovascular disease; DBP = diastolic blood pressure; SBP = systolic blood pressure.
[a]Class of recommendation.
[b]Level of evidence.
[c]Less evidence is available for this target in low–moderate-risk patients.

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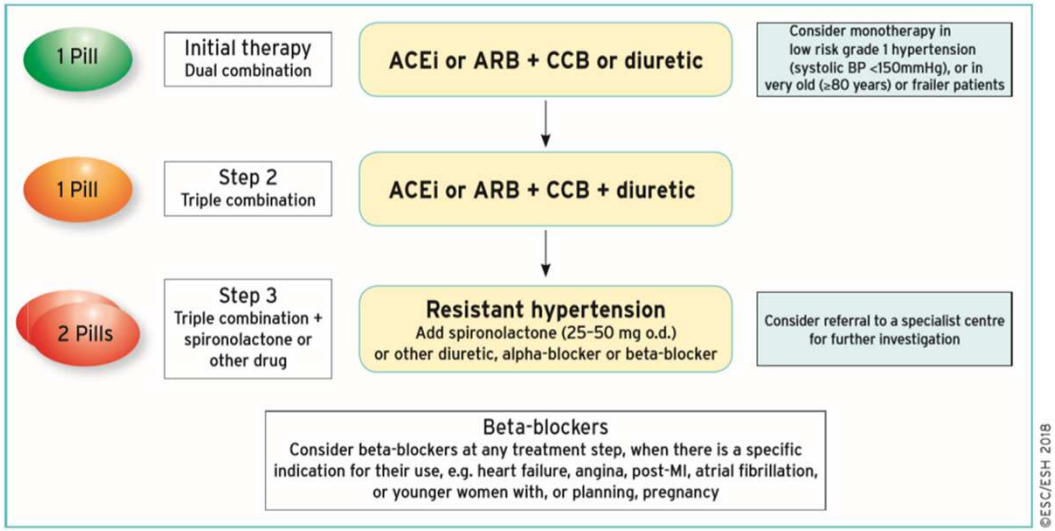
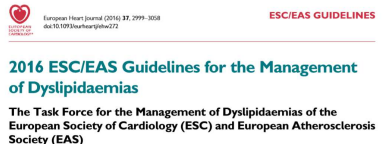
Blutdruckmanagement - Therapie

- **Lifestyle**
  - Nikotinkarenz
  - Salzrestriktion
  - Alkoholrestriktion
    - Männer < 14 U / Woche („2 kleine Bier pro Tag“)
    - Frauen < 8 U / Woche („1/8 Wein pro Tag“)
    - 1 U = 10 g = 0,33 L Bier oder 1/8 L Wein
  - Gewichtsreduktion (Vermeidung von Übergewicht)
  - Ernährung (gesättigte und Transfettsäuren↓↓)
  - Sportliche Betätigung (30 Minuten / Tag)

- **Medikamente**
  - Start mit Dual-Kombination als Single-Pill
    - RAAS-i + Ca^{2+}-Blocker oder Diuretikum
  - Bei bestehender Hypertonie: Triple-Kombination
    - RAAS-i + Ca^{2+}-Blocker + Diuretikum
  - Bei bestehender Hypertonie: Vierfach-Kombination
    - RAAS-i + Ca^{2+}-Blocker + Diuretikum + andere (BB/MRA)



Lipidmanagement - Hintergrund



- **Screening bei…**
  - Männer > 40 Jahre
  - Frauen > 50 Jahre
  - Vorliegen von Risikofaktoren

- **Lipidprofil**
  - Gesamtcholesterin (TC)
  - **LDL-Cholesterin**
  - HDL-Cholesterin
  - Triglyceride (TG)
  - *non HDL-Cholesterin*
  - *Apolipoprotein B*

- **Ergänzend (bessere Abschätzung)**
  - Lipoprotein A

Berechnung von LDL-Cholesterin nach Friedwald:
LDL-C = TC – HDL-C – TG/5

Ungenauigkeiten:
- Hohe TG (ab > 400 mg/dL ist Formel unbrauchbar)
- Nicht-nüchterne Abnahme (TG dadurch erhöht)

Framingham Systemic COronary Risk Evaluation (SCORE)

ESC/EAS GUIDELINES

2016 ESC/EAS Guidelines for the Management of Dyslipidaemias

The Task Force for the Management of Dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS)

Patientin A:

51 Jahre

Raucherin

Blutdruck syst. = **160 mmHg**

Gesamtcholesterin = **280 mg/dL**

Risiko auf letales kardiovaskuläres Ereignis in den nächsten 10 Jahren:

1 %

Risiko auf ein kardiovaskuläres Ereignis in den nächsten 10 Jahren:

4 %

„Moderates Risiko“

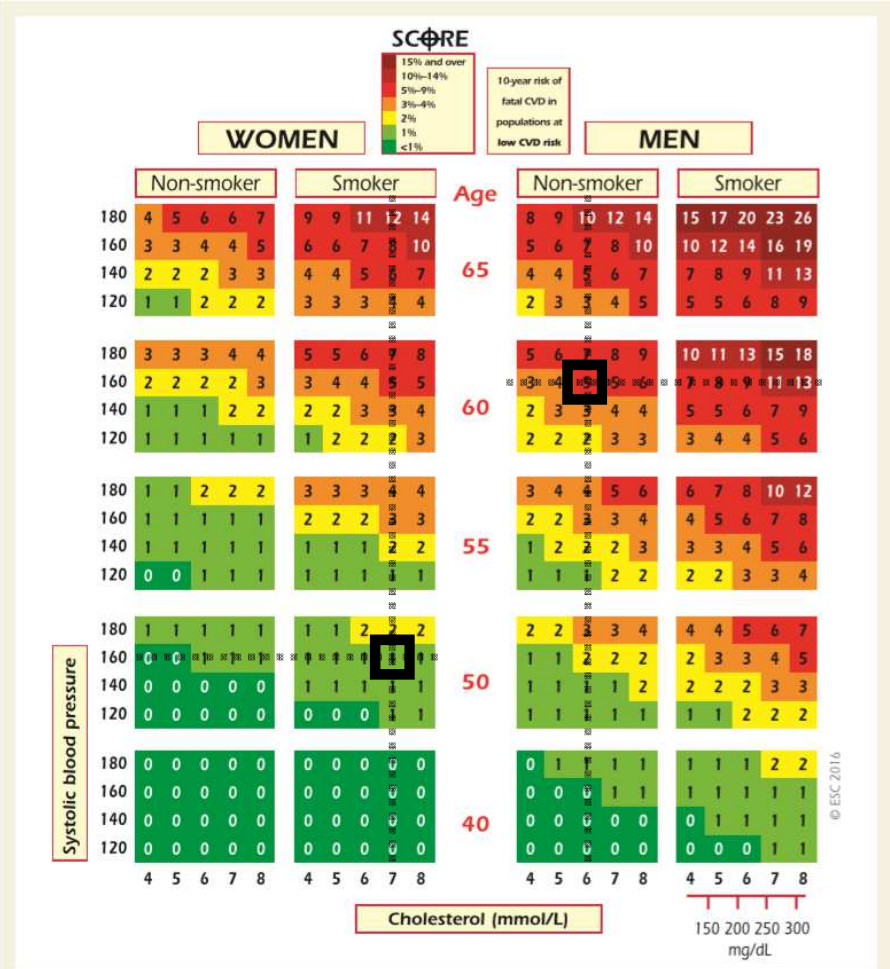


Figure 3 **SCORE chart:** 10-year risk of fatal cardiovascular disease (CVD) in populations at low CVD risk based on the following risk factors: age, gender, smoking, systolic blood pressure, and total cholesterol. To convert the risk of fatal CVD to risk of total (fatal + non-fatal) hard CVD, multiply by 3 in men and 4 in women, and slightly less in old people. Note: the SCORE chart is for use in people without overt CVD, diabetes, chronic kidney disease, familial hypercholesterolaemia, or very high levels of individual risk factors because such people are already at high-risk and need intensive risk factor advice.

Patient B:

60 Jahre

Nichtraucher

Blutdruck syst. = **162 mmHg**

Gesamtcholesterin = **220 mg/dL**

Risiko auf letales kardiovaskuläres Ereignis in den nächsten 10 Jahren:

5 %

Risiko auf ein kardiovaskuläres Ereignis in den nächsten 10 Jahren:

15 %

„Hohes Risiko“

Lipidmanagement – wozu Risikokalkulation?

European Heart Journal (2016) 37, 2999–3058
doi:10.1093/eurheartj/ehw272
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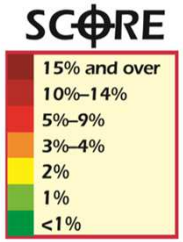
- Hilfestellung bezüglich medikamentöser Intervention
- **Risikogruppen**



Very High Risk	High Risk	Intermediate Risk	Low Risk
SCORE ≥ 10 %	SCORE ≥ 5 % < 10 %	SCORE ≥ 1 % < 5 %	SCORE < 1 %
St.p. MI oder ACS St.p. PCI oder PTA St.p. CABG St.p. Insult/TIA	Unkontrollierte RF: RR > 180/110 mmHg TG > 310 mg/dL	RR > 160/100 mmHg (Grad 2 Hypertonie)	
CKD (GFR < 30)	CKD (GFR 30 – 59)		
Diabetes mit Endorganschaden oder unkontrollierten RF	Diabetes ohne Endorganschaden und keinen unkontrollierten RF		

Lipidmanagement – wann intervenieren?

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- Bestimmu… bei Borderline…

Höheres Ris…

- **HDL-C**
  - Fraue…
  - Männ…
- **Calcium S…**
  > 400 Ag…
- **LpA**
  > 50 mg…
- **Linksventr…**
  - > 115…
  - > 95 g…
- **Carotis-Pl…**

Table 5 Intervention strategies as a function of total cardiovascular risk and low-density lipoprotein cholesterol level

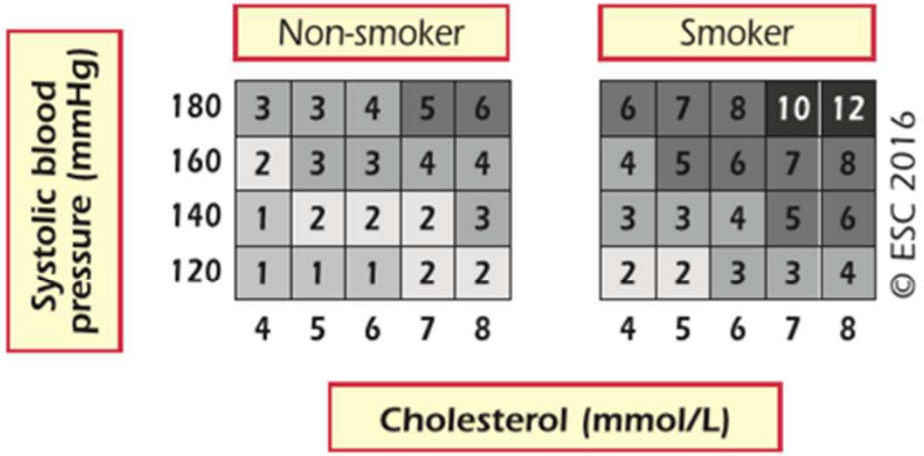

Figure 4 Relative risk chart for 10-year cardiovascular mortality. Please note that this chart shows RELATIVE not absolute risk. The risks are RELATIVE to 1 in the bottom left. Thus, a person in the top right hand box has a relative risk that is 12 times higher than a person in the bottom left.

≥10 or very high-risk	Lifestyle intervention, consider drug[c]	and concomitant drug intervention	and concomitant drug intervention	and concomitant drug intervention	and concomitant drug intervention
Class[a]/Level[b]	IIa/A	IIa/A	I/A	I/A	I/A

CV = cardiovascular; LDL-C = low-density lipoprotein cholesterol; SCORE = Systematic Coronary Risk Estimation.
[a]Class of recommendation.
[b]Level of evidence.
[c]In patients with myocardial infarction, statin therapy should be considered irrespective of total cholesterol levels

Online-Tools

European Heart Journal (2016) 37, 2999–3058
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Developed with the special contribution of the European Assocciation for Cardiovascular Prevention & Rehabilitation (EACPR)

are available on the ESC website (http://www.escardio.org/guidelines). The additional impact of HDL-C on risk estimation is illustrated in *Figures* 6 and 7. In these charts, HDL-C is used categorically. The electronic version of SCORE, HeartScore (http://www.heartscore.org), has been modified to take HDL-C

Online-Tools

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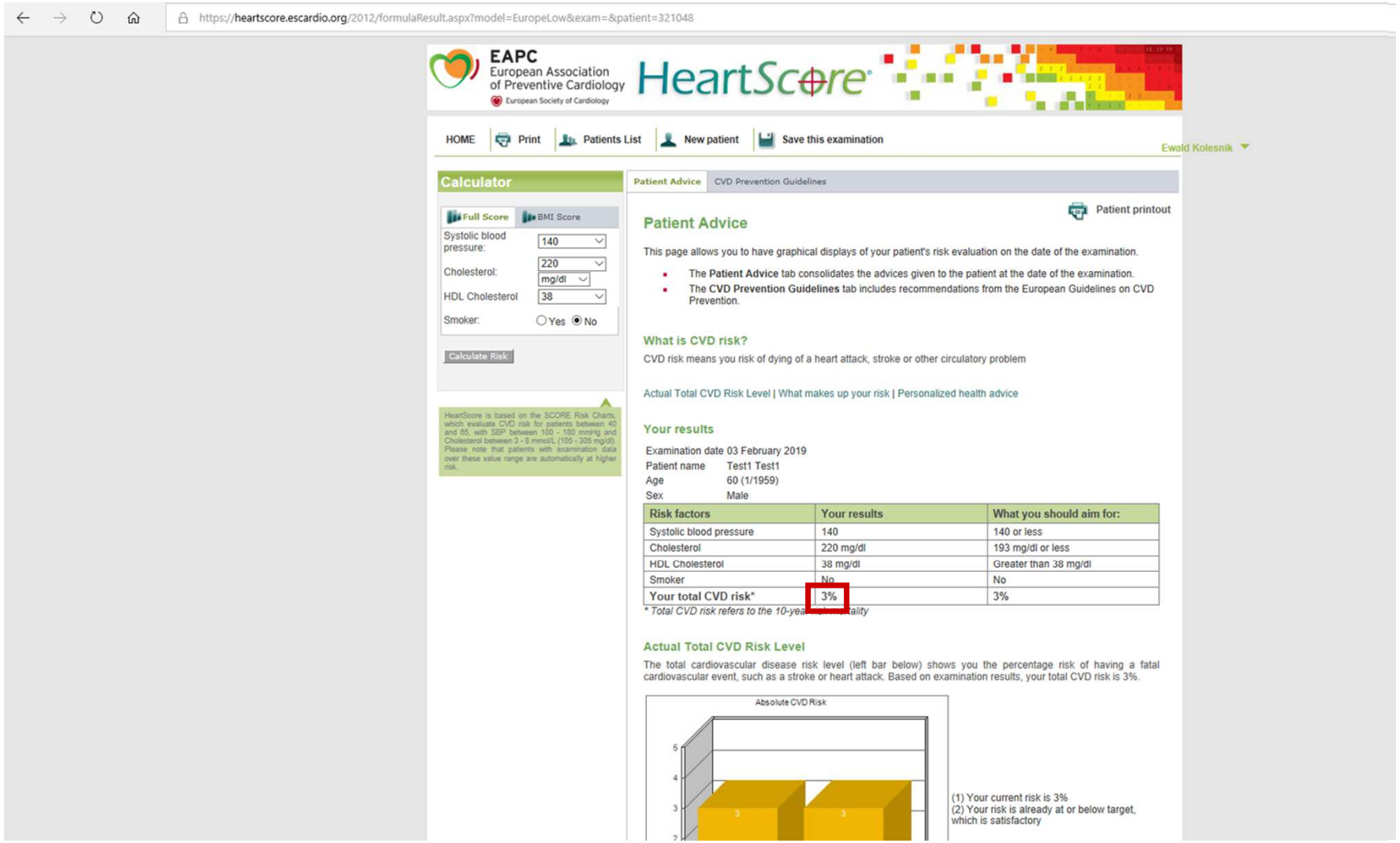

Lipidmanagement - Therapieziele

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- Behandlung je nach Risikogruppe
- **Therapieziele**
  - **Primär: LDL-C (IA)**
  - **Sekundär: Non-HDL-C (IIaB)**
  - **Sekundär: Apolipoprotein B (IIaB)**
  - **Kein Therapieziel: HDL-C bzw. Ratios (III)**

Table 9 Recommendations for lipid analyses as treatment targets in the prevention of cardiovascular disease

Recommendations	Class[a]	Level[b]	Ref[c]
LDL-C is recommended as the primary target for treatment.	I	A	64, 68
TC should be considered as a treatment target if other analyses are not available.	IIa	A	64, 123
Non-HDL-C should be considered as a secondary treatment target.	IIa	B	103
ApoB should be considered as a secondary treatment target, when available.	IIa	B	103, 124
HDL-C is not recommended as a target for treatment.	III	A	92, 93
The ratios apoB/apoA1 and non-HDL-C/HDL-C are not recommended as targets for treatment.	III	B	103

Apo = apolipoprotein; HDL-C = high-density lipoprotein-cholesterol; LDL-C = low-density lipoprotein-cholesterol; TC = total cholesterol.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendations.

			Very High Risk	High Risk	Intermediate Risk	Low Risk
LDL-C	I	A	< 70 / - 50 % of Baseline (IB)	< 100 / - 50 % of Baseline (IB)	< 115 (IIaC)	Kein Ziel definiert
Non-HDL-C	IIa	B	< 100	< 130	< 145	Kein Ziel definiert
ApoB	IIa	B	< 80	< 100	Kein Ziel definiert	Kein Ziel definiert

Lipidmanagement - Interventionen

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- **Lifestyle**
  - Gewichtsreduktion (Vermeidung von Übergewicht)
  - Ernährung (gesättigte Fettsäuren und Transfettsäuren↓↓)
  - Alkohol
    - Männer < 20 g/Tag
    - Frauen < 10 g/Tag
    - 10 g = 0,33 L Bier oder 1/8 L Wein
  - Sportliche Betätigung (30 Minuten / Tag an 5-7 Tagen pro Woche)

- **Medikamente**
  - Statine (HMG-CoA-Inhibitoren)
  - Ezetimib (Cholesterinabsorptions-Inhibitor)
  - PCSK9 Inhibitor

			Very High Risk	High Risk	Intermediate R
LDL-C	I	A	< 70 / - 50 % of Baseline (IB)	< 100 / - 50 % of Baseline (IB)	< 115 (IIaC)
Non-HDL-C	IIa	B	< 100	< 130	< 145
ApoB	IIa	B	< 80	< 100	Kein Ziel definiert

Table 16 Recommendations for the pharmacological treatment of hypercholesterolaemia

Recommendations	Class[a]	Level[b]	Ref[c]
Prescribe statin up to the highest recommended dose or highest tolerable dose to reach the goal.	I	A	62, 64, 68
In the case of statin intolerance, ezetimibe or bile acid sequestrants, or these combined, should be considered.	IIa	C	239, 256, 257
If the goal is not reached, statin combination with a cholesterol absorption inhibitor should be considered.	IIa	B	63
If the goal is not reached, statin combination with a bile acid sequestrant may be considered.	IIb	C	
In patients at very high-risk, with persistent high LDL-C despite treatment with maximal tolerated statin dose, in combination with ezetimibe or in patients with statin intolerance, a PCSK9 inhibitor may be considered.	IIb	C	115, 116

LDL-C = low-density lipoprotein-cholesterol; PCSK9 = proprotein convertase subtilisin/kexin type 9.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendations.

Lipidmanagement – Medikamentöse Titration

ESC/EAS GUIDELINES

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- **Start mit potentem Statin**
  - Wenn Ziel-LDL trotz Höchstdosis nicht erreicht: **Ezetimib zusätzlich**
  - Wenn Ziel-LDL noch immer nicht erreicht: **PCSK9-i statt Ezetimib**
- **Bei Statin-Unverträglichkeit**
  - 1) **Statin absetzen** und **alternatives Statin** nach Wash-out (2-6 Wochen) versuchen
  - 2) **Bei erneuter Unverträglichkeit**: **Ezetimib bzw. PCSK9-i**
- **Wenn LDL-C Ziel erreicht**
  - Therapie fortsetzen

			Very High Risk	High Risk	Intermediate R
LDL-C	I	A	< 70 / - 50 % of Baseline (IB)	< 100 / - 50 % of Baseline (IB)	< 115 (IIaC)
Non-HDL-C	IIa	B	< 100	< 130	< 145
ApoB	IIa	B	< 80	< 100	Kein Ziel definiert

Table 16 Recommendations for the pharmacological treatment of hypercholesterolaemia

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[a]Class of recommendation.
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Lipidmanagement – PCSK9-i

- **PCSK9:** Pro-protein convertase subtilisin-like kexin type 9 Inhibitoren
- **Evolocumab (Repatha), Alirocumab (Praluent)**
- Prinzip: PCSK9 markiert LDL-Rezeptor für lysosomalen Abbau am Hepatozyten
  - Wirkstoffe: Antikörper gegen PCSK9 -> mehr LDL-Rezeptoren -> mehr LDL wird abgebaut
- ***Verschreibung:*** *Zuweisung an eine endokrinologische Abteilung zur Bewilligung*

Thrombozytenfunktionshemmung (APT)

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2016 European Guidelines on cardiovascular disease prevention in clinical practice

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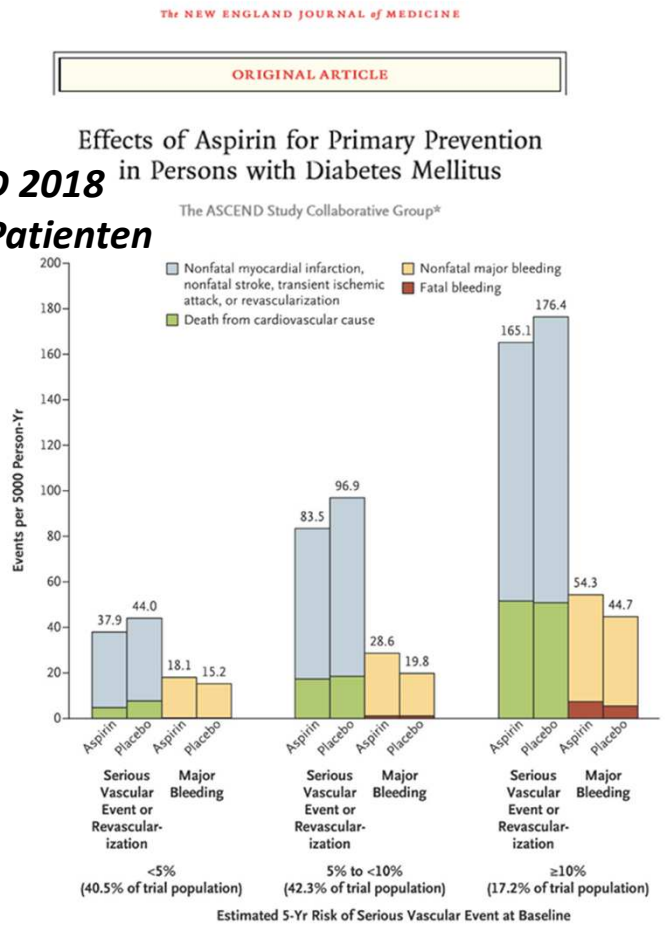
- SAPT ist zur generellen Primärprevention ***nicht empfohlen***

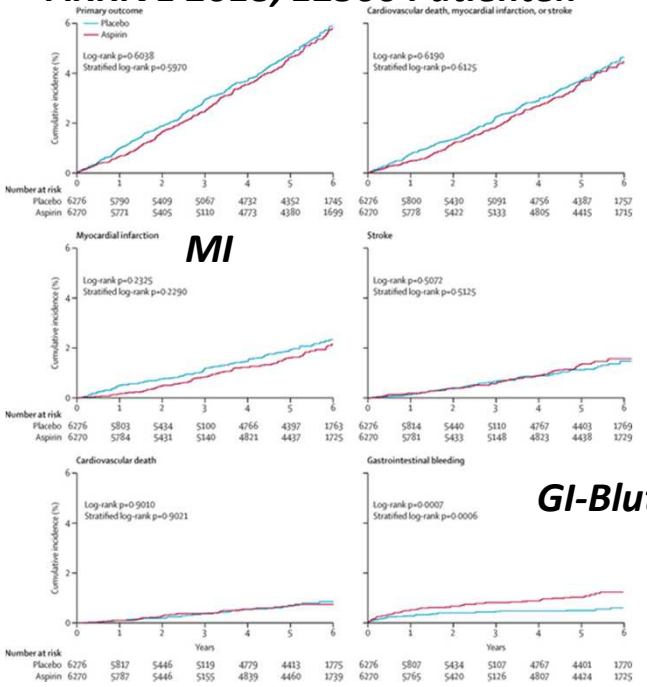
Antiplatelet therapy is not recommended in individuals without CVD due to the increased risk of major bleeding.	III	B

ASCEND 2018
15480 Patienten



***Lancet* 2018; 392: 1036–46**

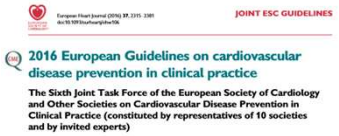
ARRIVE 2018, 12500 Patienten



MI

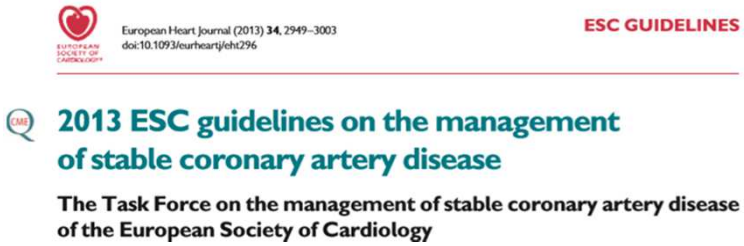
GI-Blutungen

Thrombozytenfunktionshemmung

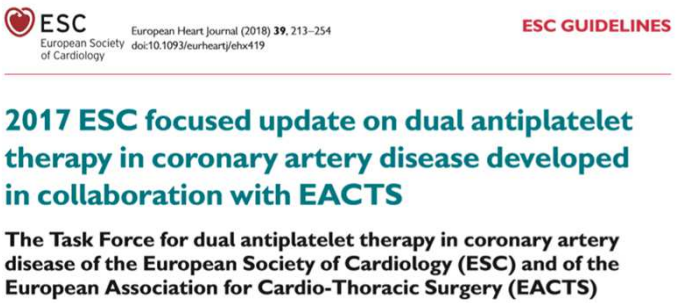


- **Aspirin** oder **Clopidogrel** ist zur Prävention bei gesicherten kardiovaskulären Erkrankungen **empfohlen**

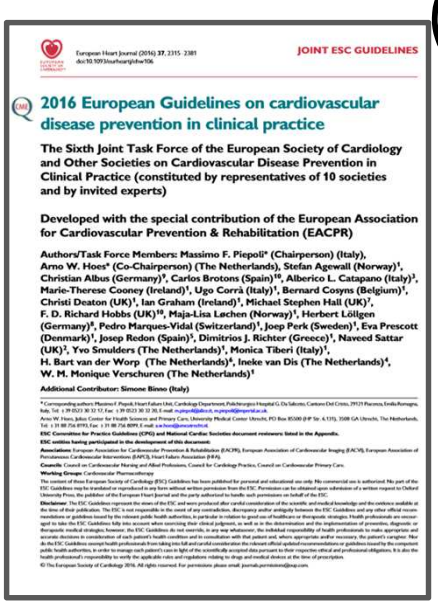
Event prevention		
Low-dose aspirin daily is recommended in all SCAD patients.	I	A
Clopidogrel is indicated as an alternative in case of aspirin intolerance.	I	B
Statins are recommended in all SCAD patients.	I	A
It is recommended to use ACE inhibitors (or ARBs) if presence of other conditions (e.g. heart failure, hypertension or diabetes).	I	A



- **DAPT** nur nach Stentimplantationen
  - *Elektiv*: 6 Monate ASS + CLO
  - *ACS*: 12 Monate ASS + TIC / PRA / (CLO)



Von der Guideline zur praktischen Anwendung



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Additional Contributor: Simone Binno (Italy)

Sozioökonomischer Aspekt – PURE Study

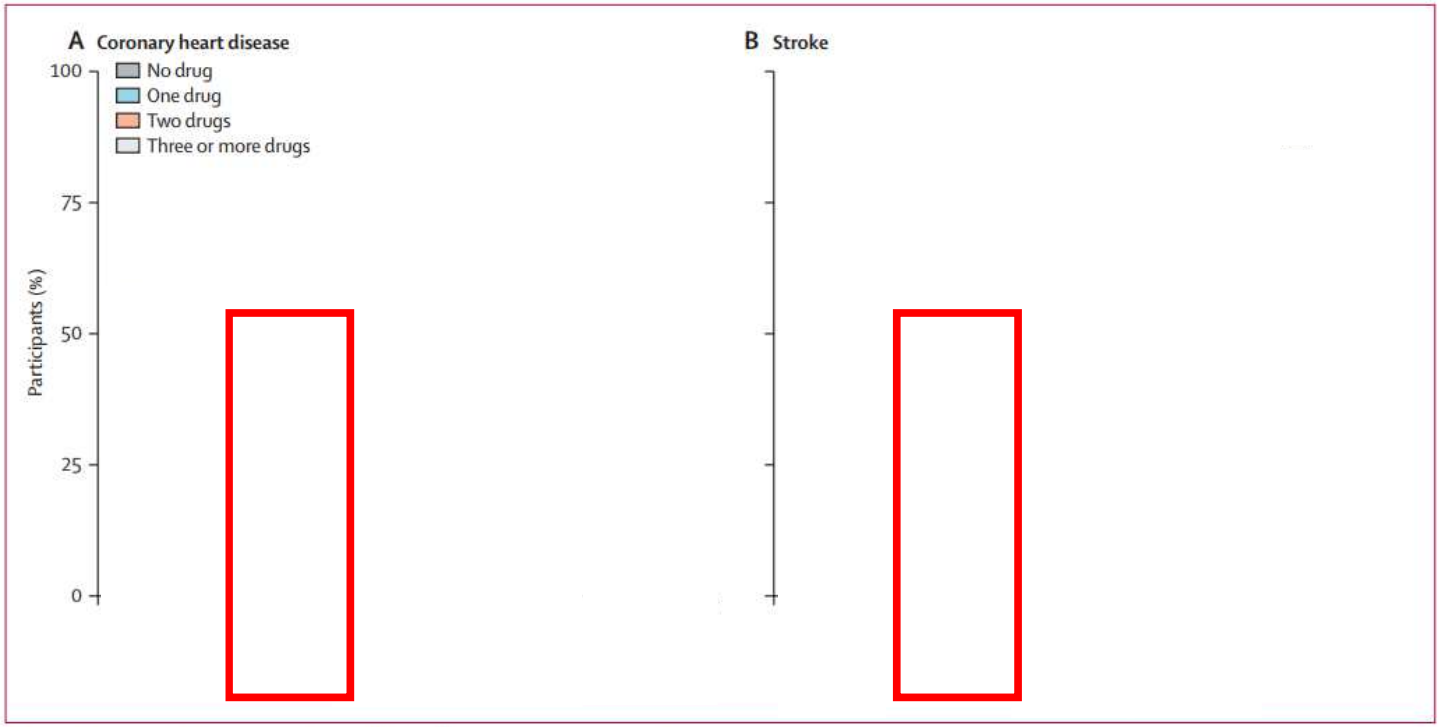


Figure 2: **Number of drugs taken by individuals by country economic status**
For coronary heart disease (A), drugs counted were aspirin, β blockers, ACE inhibitors or ARBs, or statins. For stroke (B), drugs counted were aspirin, statins, ACE inhibitors or ARBs, or other blood-pressure-lowering drugs (eg, β blockers, diuretics, and calcium-channel blockers). ACE=angiotensin-converting enzyme. ARB=angiotensin-receptor blocker.

Yusuf et al. Lancet 2013

PURE Study

High-income countries
- Canada
- Sweden
- UAE
- Overall

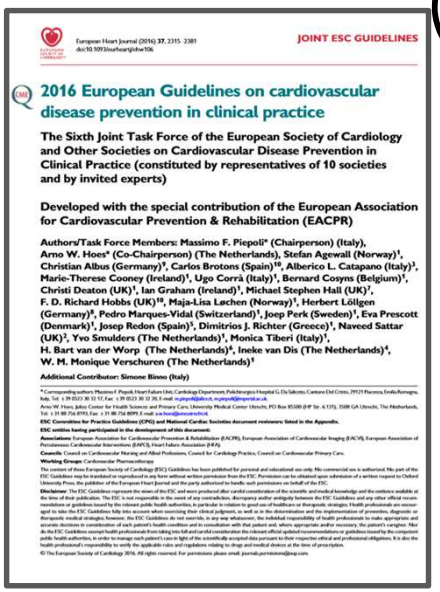
	Communities			Participants		
	Overall	Urban	Rural	Overall	Urban	Rural
All countries	628	348 (55·4%)	280 (44·6%)	153 996	80 925 (52·6%)	73 071 (47·4%)
High-income countries						
Canada	82	53 (64·6%)	29 (35·4%)	10 416	7282 (69·9%)	3134 (30·1%)
Sweden	31	28 (90·3%)	3 (9·7%)	4153	3251 (78·3%)	902 (21·7%)
UAE	3	1 (33·3%)	2 (66·7%)	1504	1000 (66·5%)	504 (33·5%)
Overall	116	82 (70·7%)	34 (29·3%)	16 073	11 533 (71·8%)	4540 (28·2%)
Upper middle-income countries						
Argentina	20	6 (30·0%)	14 (70·0%)	7527	3607 (47·9%)	3920 (52·1%)
Brazil	14	7 (50·0%)	7 (50·0%)	6070	3949 (65·1%)	2121 (34·9%)
Chile	5	2 (40·0%)	3 (60·0%)	3451	2808 (81·4%)	643 (18·6%)
Malaysia	71	53 (74·6%)	18 (25·4%)	15 617	6841 (43·8%)	8776 (56·2%)
Poland	4	1 (25·0%)	3 (75·0%)	2036	1210 (59·4%)	826 (40·6%)
South Africa	8	4 (50·0%)	4 (50·0%)	4585	2416 (52·7%)	2169 (47·3%)
Turkey	44	31 (70·5%)	13 (29·5%)	4232	2765 (65·3%)	1467 (34·7%)
Overall	166	104 (62·7%)	62 (37·3%)	43 518	23 596 (54·2%)	19 922 (45·8%)
Lower middle-income countries						
China	115	45 (39·1%)	70 (60·9%)	46 285	22807 (49·3%)	23 478 (50·7%)
Colombia	58	35 (60·3%)	23 (39·7%)	7444	3761 (50·5%)	3683 (49·5%)
Iran	20	11 (55·0%)	9 (45·0%)	6013	3031 (50·4%)	2982 (49·6%)
Overall	193	91 (47·2%)	102 (52·8%)	59 742	29 599 (49·5%)	30 143 (50·5%)
Low-income countries						
Bangladesh	56	30 (53·6%)	26 (46·4%)	2934	1379 (47·0%)	1555 (53·0%)
India	90	38 (42·2%)	52 (57·8%)	28 747	13 380 (46·5%)	15 367 (53·5%)
Pakistan	4	2 (50·0%)	2 (50·0%)	1742	980 (56·3%)	762 (43·7%)
Zimbabwe	3	1 (33·3%)	2 (66·7%)	1240	458 (36·9%)	782 (63·1%)
Overall	153	71 (46·4%)	82 (53·6%)	34 663	16 197 (46·7%)	18 466 (53·3%)

UAE=United Arab Emirates.

Table 1: **Number of communities and participants by country income**

Yusuf et al. Lancet 2013

Von der Guideline zur praktischen Anwendung



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JOINT ESC GUIDELINES

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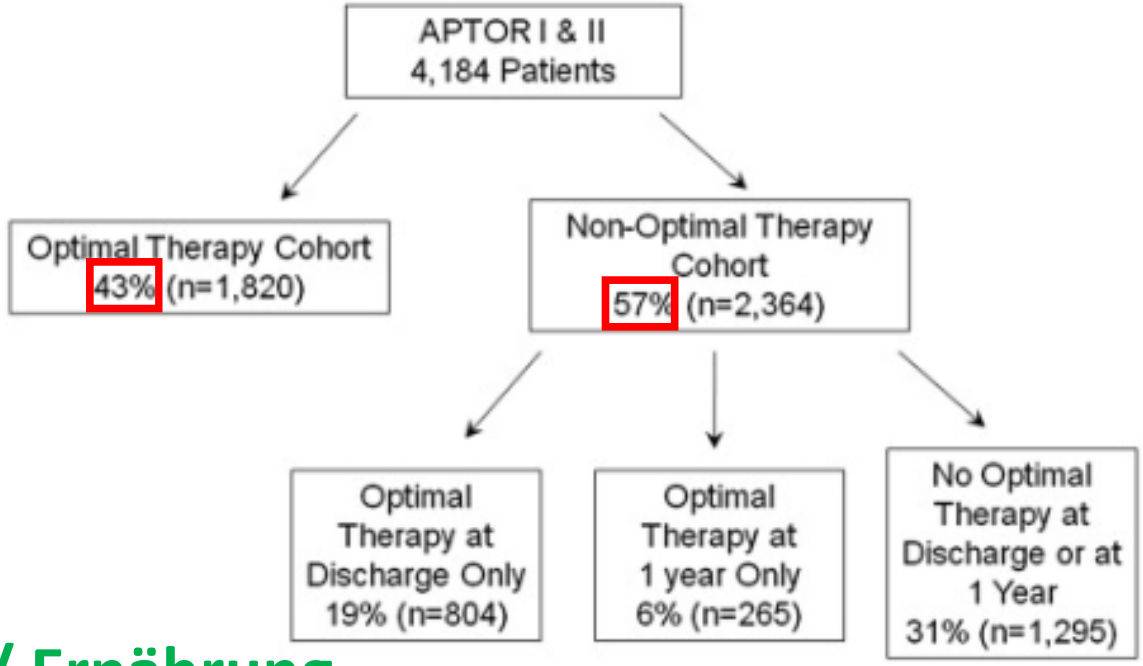
Additional Contributor: Simone Binno (Italy)

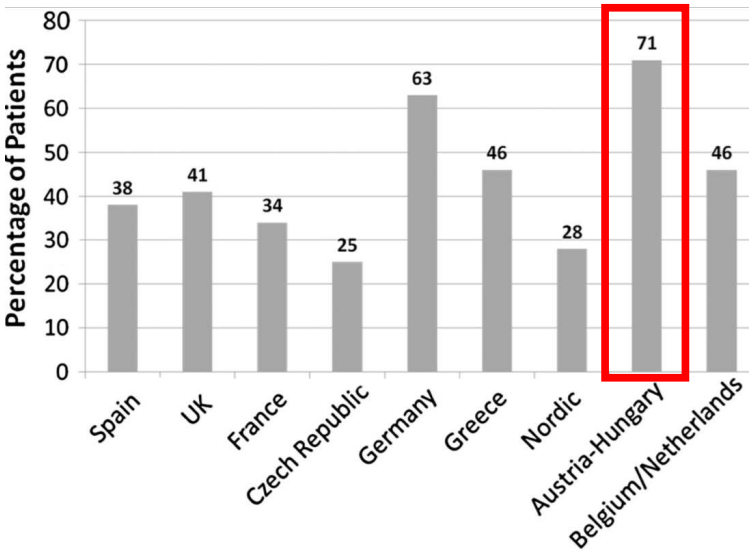
Antiplatlet Therapy Observational Registry (APTOR)

- 2007-2009; 14 europäische Länder
- Demissio / 1-Jahres Follow up
- Einschluss: Patienten mit ACS
- **Optimale Therapie:**
  - DAPT + 3 weitere…
    - Statin
    - BB
    - RAAS-i
    - physikalische Aktivität / Ernährung



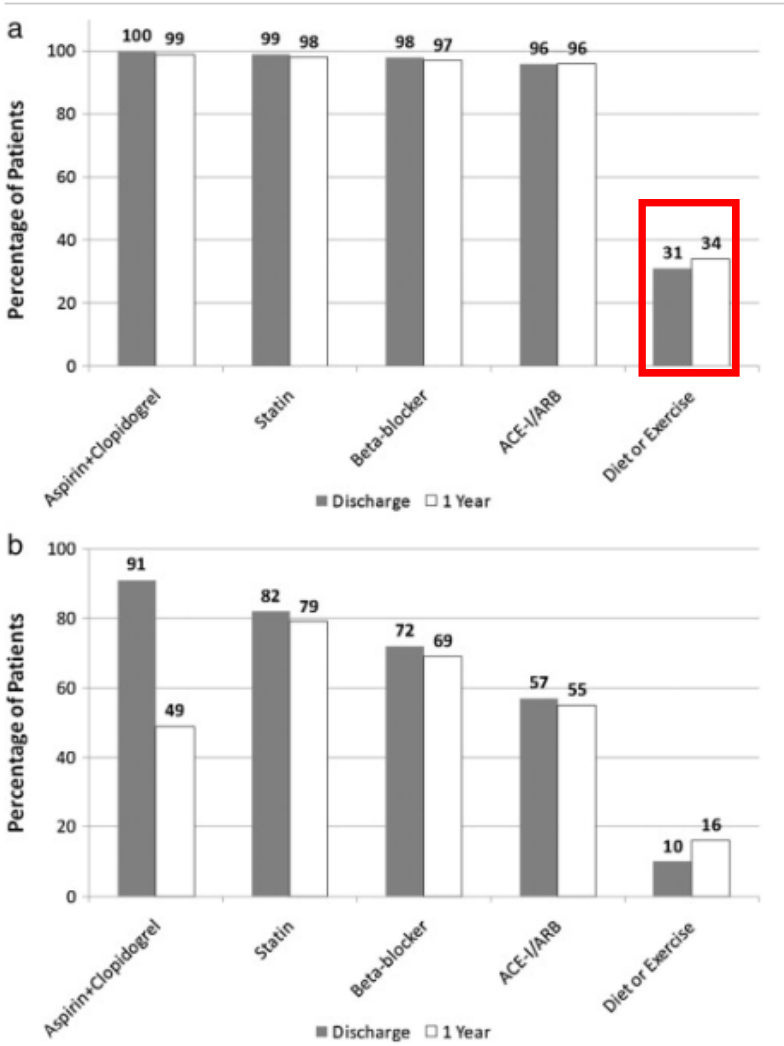
Zeymer et al. International Journal of Cardiology, 2013

Antiplatlet Therapy Observational Registry (APTOR)



Optimale Sekundärprevention

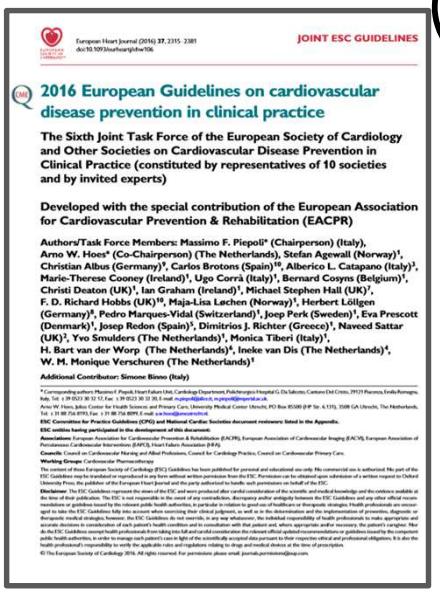
Optimale Sekundärprevention (= 43 % der Patienten)



Nicht-Optimale Sekundärprevention (= 57 % der Patienten)

Zeymer et al. International Journal of Cardiology, 2013

Von der Guideline zur praktischen Anwendung



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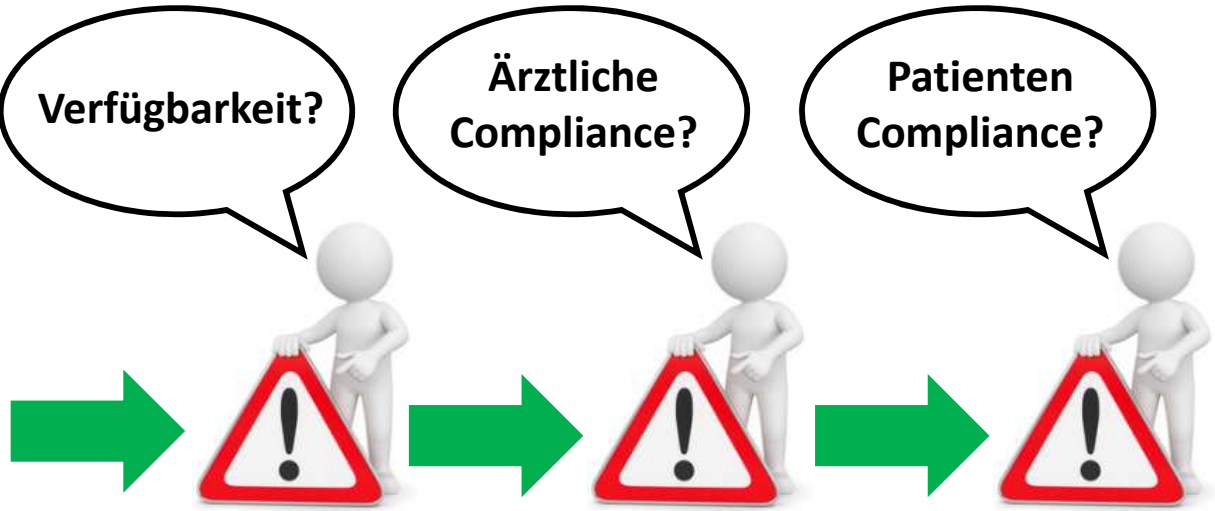


Noncompliance

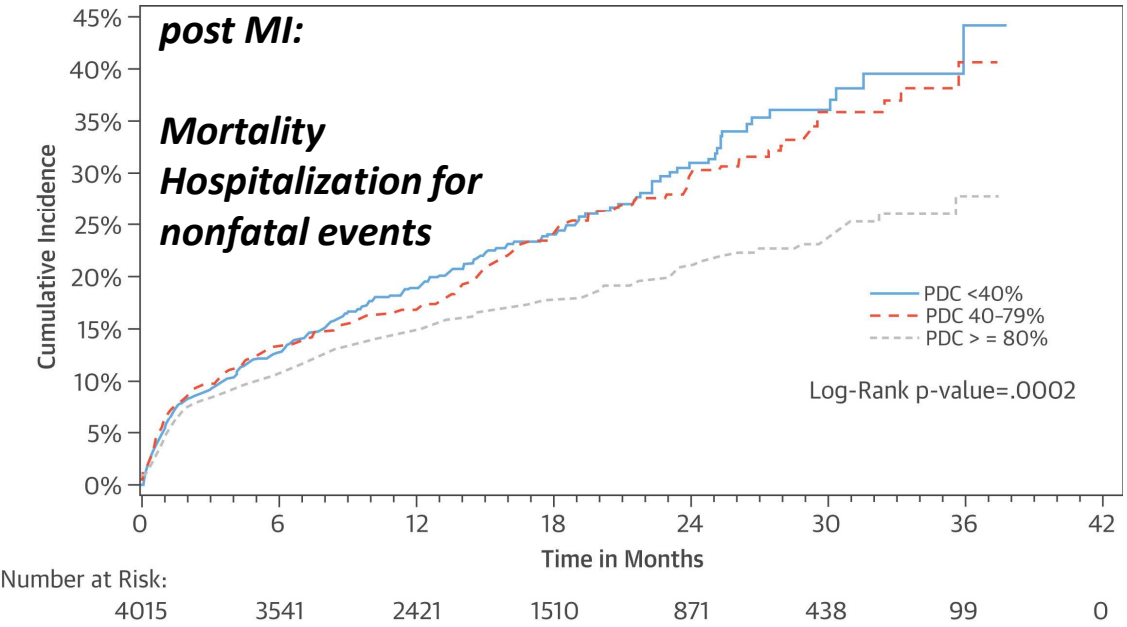
Drugs don‘t work in patients who don‘t take them

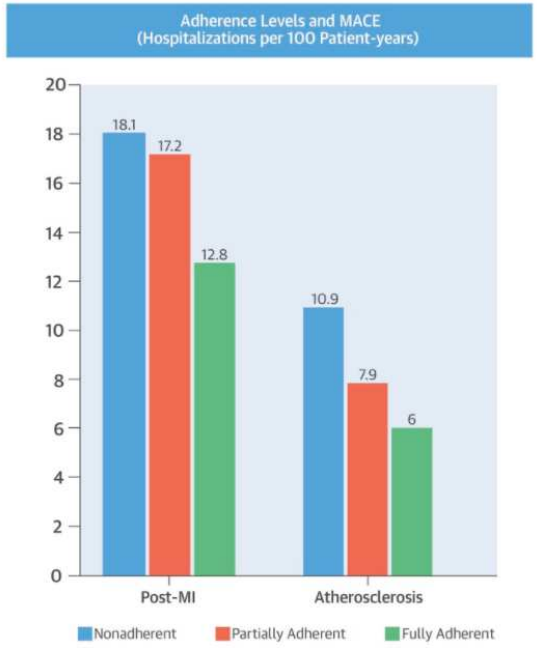
- **20-50 % non-compliance in USA**

Excerpted with permission from the American College of Preventive Medicine. *Medication Adherence: Improving Health Outcomes Time Tool: A Resource from the American College of Preventive Medicine.* 2011. Retrieved from http://www.acpm.org/?MedAdhereTTProviders.

Compliance ist wichtig…

- **Compliance verbessert** weiteren Gesundheitsverlauf *Simpson et al, BMJ 2006*
- **Non-compliance** in Sekundärprevention mit **erhöhter Mortalität** assoziiert *Jackevicius et al, Circulation 2008*





Full compliant **> 80 %**
Partial compliant **40-80 %**
Poor compliant **< 40 %**

Bansailal et al. JACC 2016

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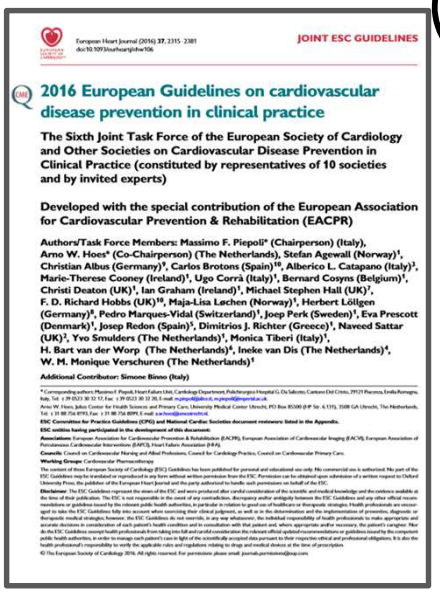

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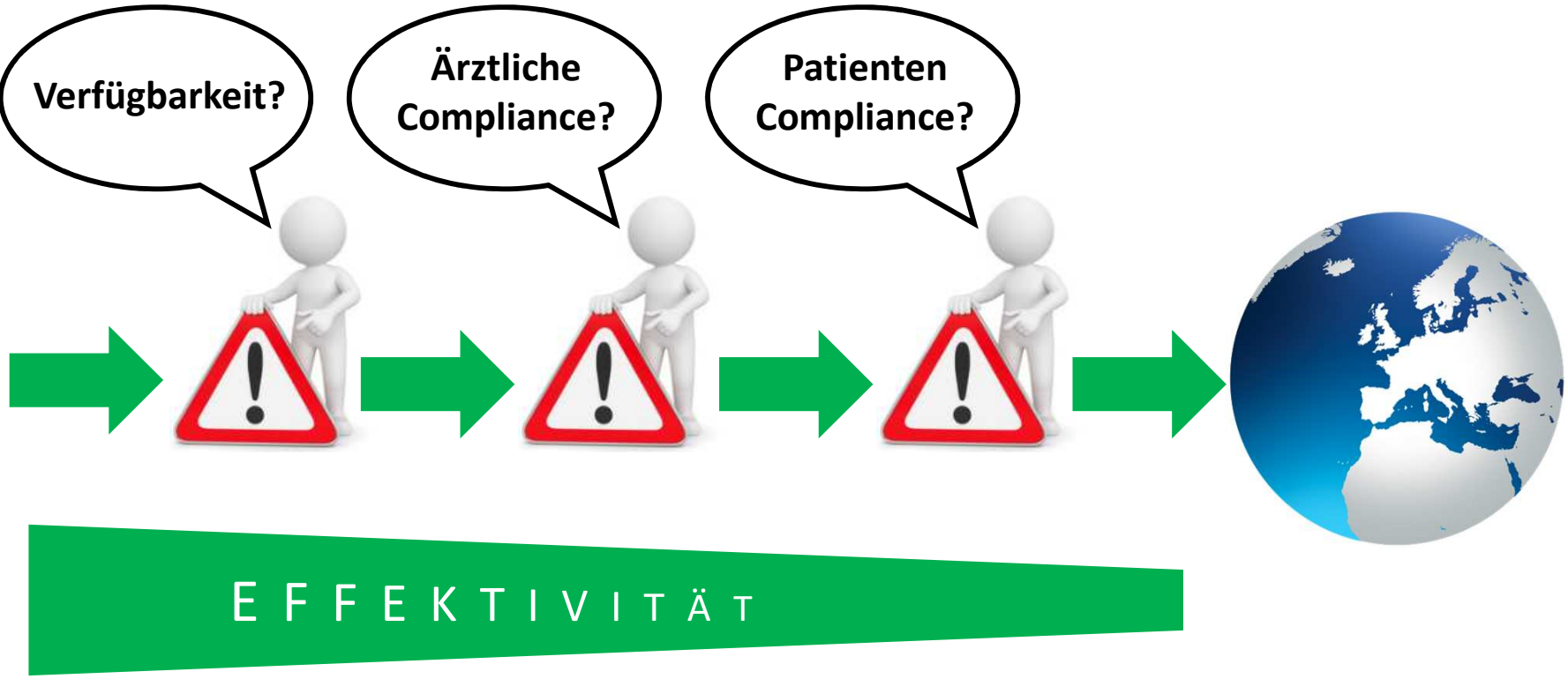
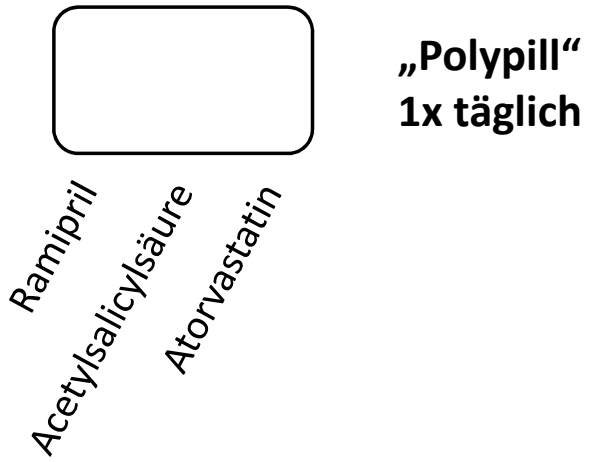


Die Rolle der Polypill?

Die Polypill

- Seit 2001 für kardiovaskuläre Erkrankungen
- Etabliert bei Behanldung von Infektionskrankheiten
- Träger Einsatz im kardio-vaskulären Bereich

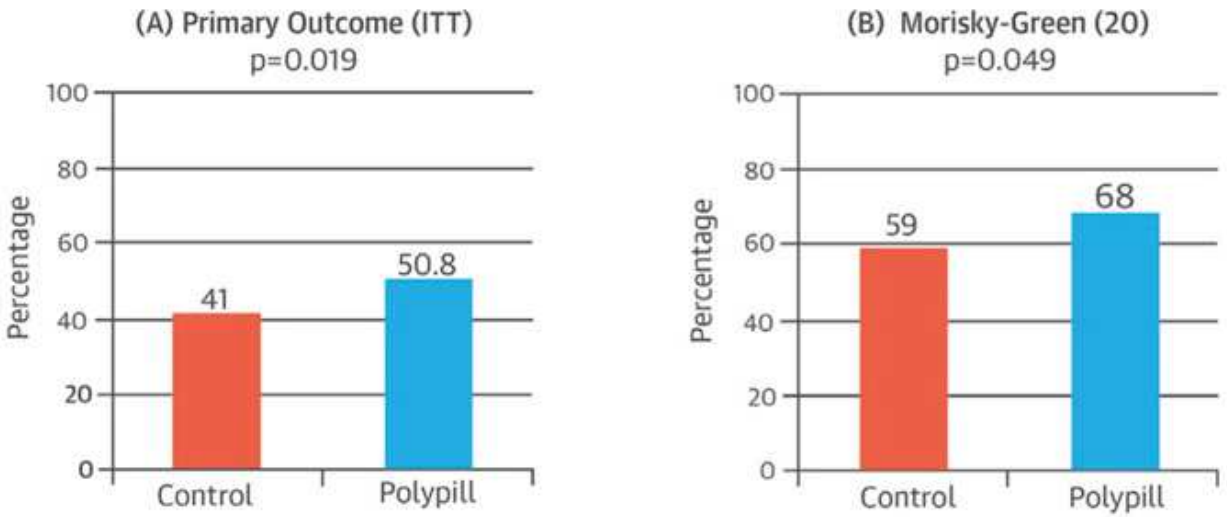


Verbesserung der Compliance

- Empfehlung der Gesellschaften zur Verbesserung der Compliance:

„Keep it simple“

- Beispiel: **FOCUS trial** *Castellano et al, JACC 2014*



Recommendations for achieving medication adherence

Recommendations	Class[a]	Level[b]	Ref[c]
Simplifying the treatment regimen to the lowest acceptable level is recommended, with repetitive monitoring and feedback. In case of persistent non-adherence, multi-session or combined behavioural interventions are recommended.	I	A	481
It is recommended that physicians assess medication adherence, and identify reasons for non-adherence in order to tailor further interventions.	I	C	482–484

1. Some people forget to take their medications. How often does this happen to you?
2. Some people miss out a dose of their medication or adjust it to suit their own needs. How often do you do this?
3. Some people stop taking their medication when they feel better. How often do you do this?
4. Some people stop taking their medication when they feel worse. How often do you do this?

immer, sehr oft, oft, nicht sehr oft, nie

Guideline zur Polypill

Recommendations for achieving medication adherence

Recommendations	Class[a]	Level[b]	Ref[c]
Simplifying the treatment regimen to the lowest acceptable level is recommended, with repetitive monitoring and feedback. In case of persistent non-adherence, multi-session or combined behavioural interventions are recommended.	I	A	481
It is recommended that physicians assess medication adherence, and identify reasons for non-adherence in order to tailor further interventions.	I	C	482–484
The use of the polypill and combination therapy to increase adherence to drug therapy may be considered.	IIb	B	485, 486

Zusammenfassung zur Polypill

THE LANCET
Volume 389, Issue 10073, 11–17 March 2017, Pages 1055-1065

Series

Uses of polypills for cardiovascular disease and evidence to date

Dr Mark D Huffman MD [a], Prof Denis Xavier MD [b], Pablo Perel MD [c]

- **Bisher 13 Studien in 32 Ländern**
- **Compliance erhöht**
- **Gute Verträglichkeit**

- **Keine RCT mit Endpunkt „klinisches Outcome“**

Ausblick

- **NCT02596126 SECURE trial**

Secondary Prevention of Cardiovascular Disease in the Elderly Trial (SECURE)

- **Polypill (X mg Ramipril, 100 mg ASS und 40 mg Atorvastatin)**

  vs. **„standard care“**

- **Ergebnisse: ca. <u>2020</u>**