Pharmacoeconomic insight in current dyslipidemia treatment

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CARDIONALE

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Presentation outline

- Epidemiology of CV diseases

- Role of health(pharmaco) economy in CVD
  - Treatment costs and statin penetration

- Comparison of atorvastatin and rosuvastatin – the Czech model
  - Costs per LDL-C reduction
  - Costs per LDL-C target
  - Cost per CV-event risk reduction

CVD diseases mortality across Europe

- **Europe: 48 % of all death (4.3 Million)**
- EU-Europe (27 Member States): 42% (2 Mil)

- CHD – Europe: one of five
  - 20% male - 22% female
- Stroke – Europe: one of six to one of ten
  - 11% male – 17 % female

Unequal distribution

Deaths per 100 000
- <7
- ≥7, <10
- ≥10, <20
- ≥20, <50
- ≥50

Mortality decrease

Comparison 2000/2002 to 1990/1991

Reduction by almost 50 %: UK, Ireland, Finland, Czech

Reduction by 20 – 30 %: Majority of Europe

Reduction by app. 10 %: Latvia (men), Poland (women)
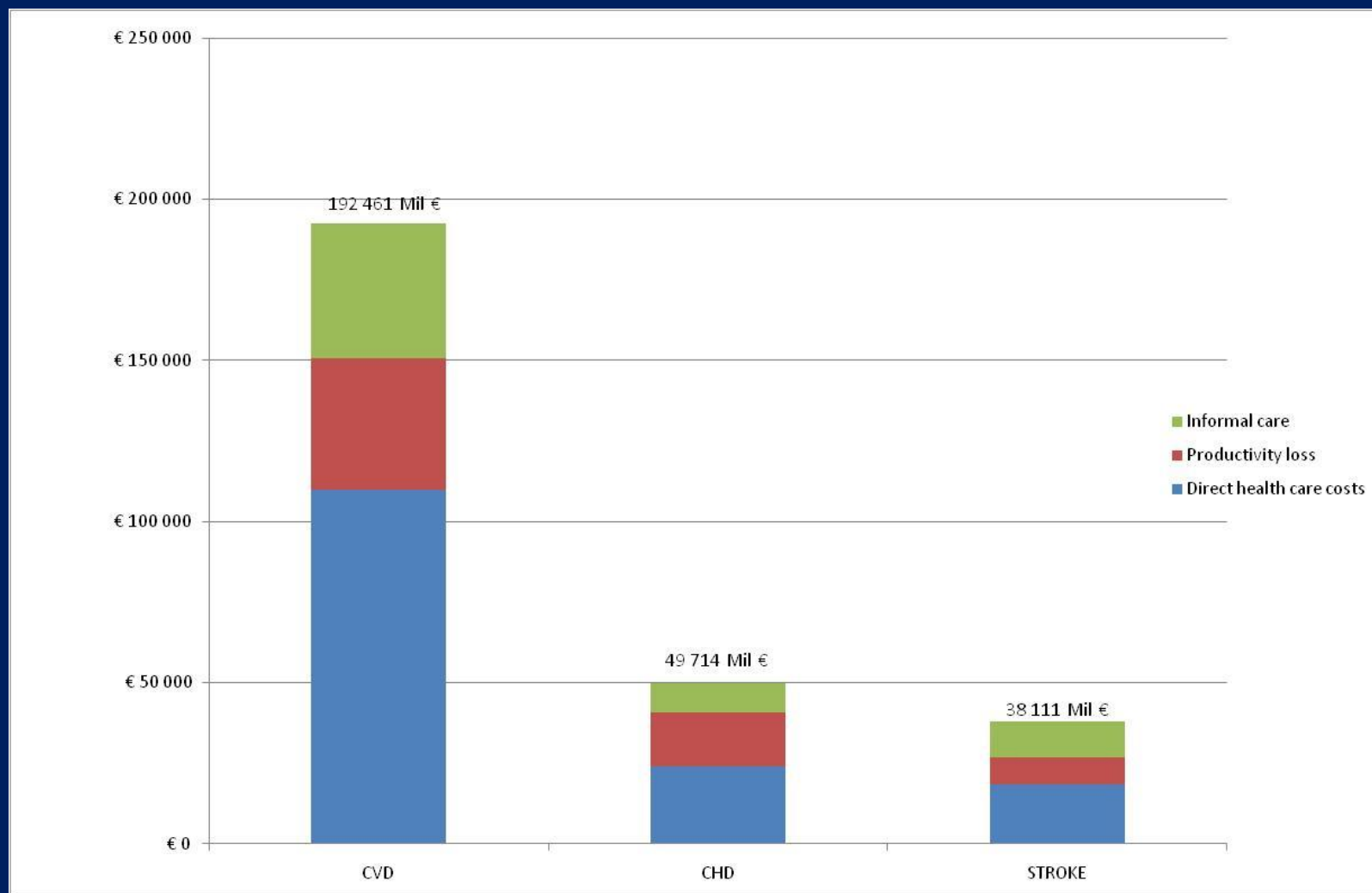
CV morbidity

- MONICA Project – most valid data set
- Differences in incidence across Europe
  - Warsaw three times higher then Catalonia
- Incidence CHD falling in most European regions, but…
  - Karelia – decrease per year by 6.5%
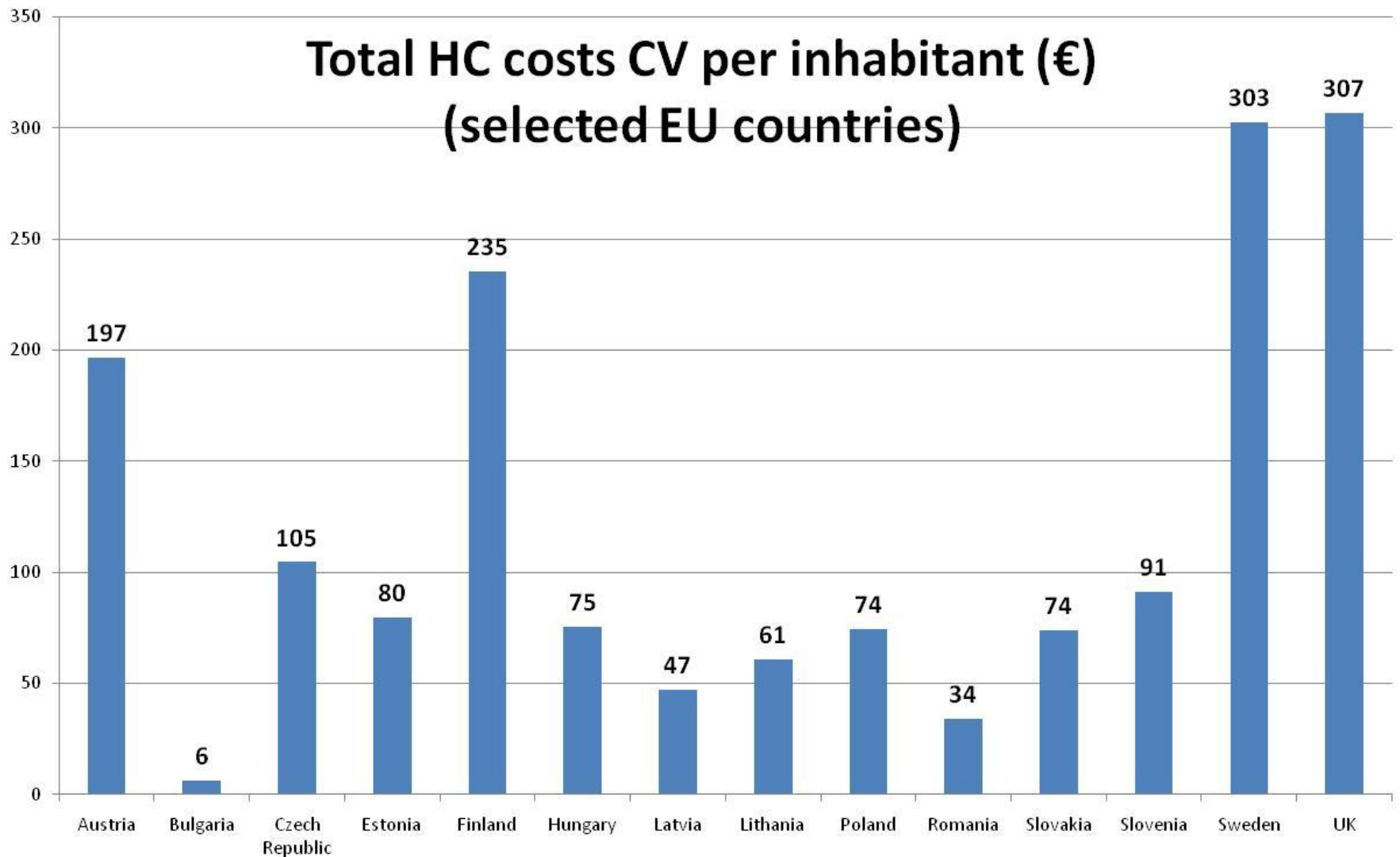 - Increase in Kaunas (Lithuania) by 1.2%

CVD and DALY loss

Groups of causes	Disease burden	
	DALYs (millions)	Proportion from all causes (%)
Selected noncommunicable diseases		
Cardiovascular diseases	34.42	23
Neuropsychiatric conditions	29.37	20
Cancer (malignant neoplasms)	17.03	11
Digestive diseases	7.12	5
Respiratory diseases	6.84	5
Sense organ diseases	6.34	4
Musculoskeletal diseases	5.75	4
Diabetes mellitus	2.32	2
Oral conditions	1.02	1
All noncommunicable diseases	*115.34*	*77*
All causes	*150.32*	*100*

DALY = disability life years loss

Economic costs – EU in € Mil.

Total HC costs CV per inhabitant (€) (selected EU countries)

Country	Value
Austria	197
Bulgaria	6
Czech Republic	105
Estonia	80
Finland	235
Hungary	75
Latvia	47
Lithania	61
Poland	74
Romania	34
Slovakia	74
Slovenia	91
Sweden	303
UK	307

Source: European Cardiovascular Disease Statistics (2008)

Total HC cos... (sele...

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Slovenia	~1
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Health expenditures per capita

Figure 3. Health expenditure per capita, US$ PPP, 2008 (or latest year available)
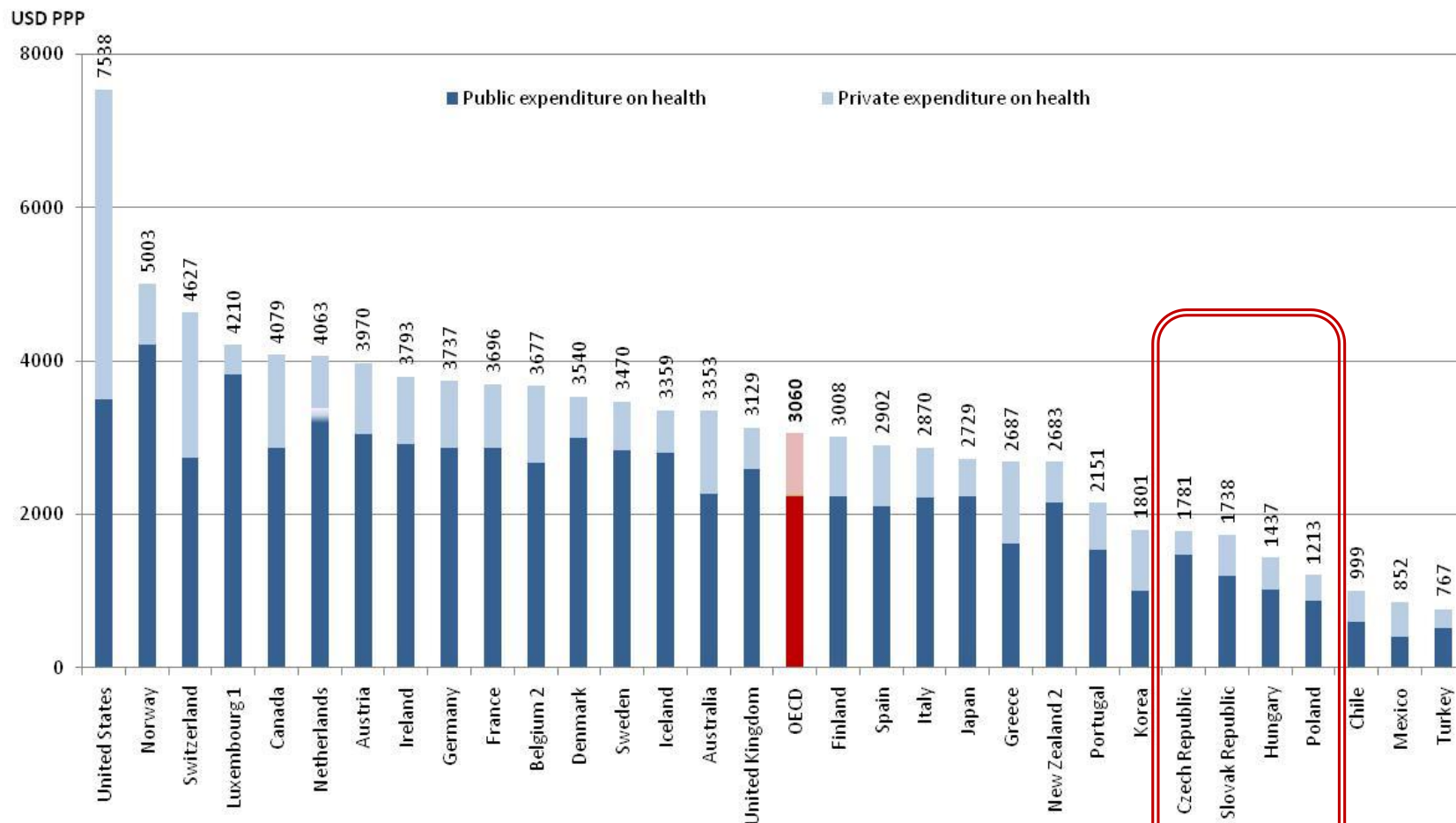
1. Refers to insured population rather than resident population. 2. Current expenditure. Source: OECD Health Data 2010.
Data are expressed in US dollars adjusted for purchasing power parities (PPPs), which provide a means of comparing spending between countries on a common base. PPPs are the rates of currency conversion that equalise the cost of a given 'basket' of goods and services in different countries.

Health(pharmaco) - economy

- Uses economic principles/concepts/theories and applies them to health-care
- Solves the clash between limited resources and increasing/unmet demand/need

$$\text{VALUE OF INTERVENTION} = \frac{\text{COSTS}}{\text{OUTCOMES}}$$

Cost effectiveness – the 4th hurdle

Quality

Efficacy

Safety

Cost-effectiveness

Budget-impact
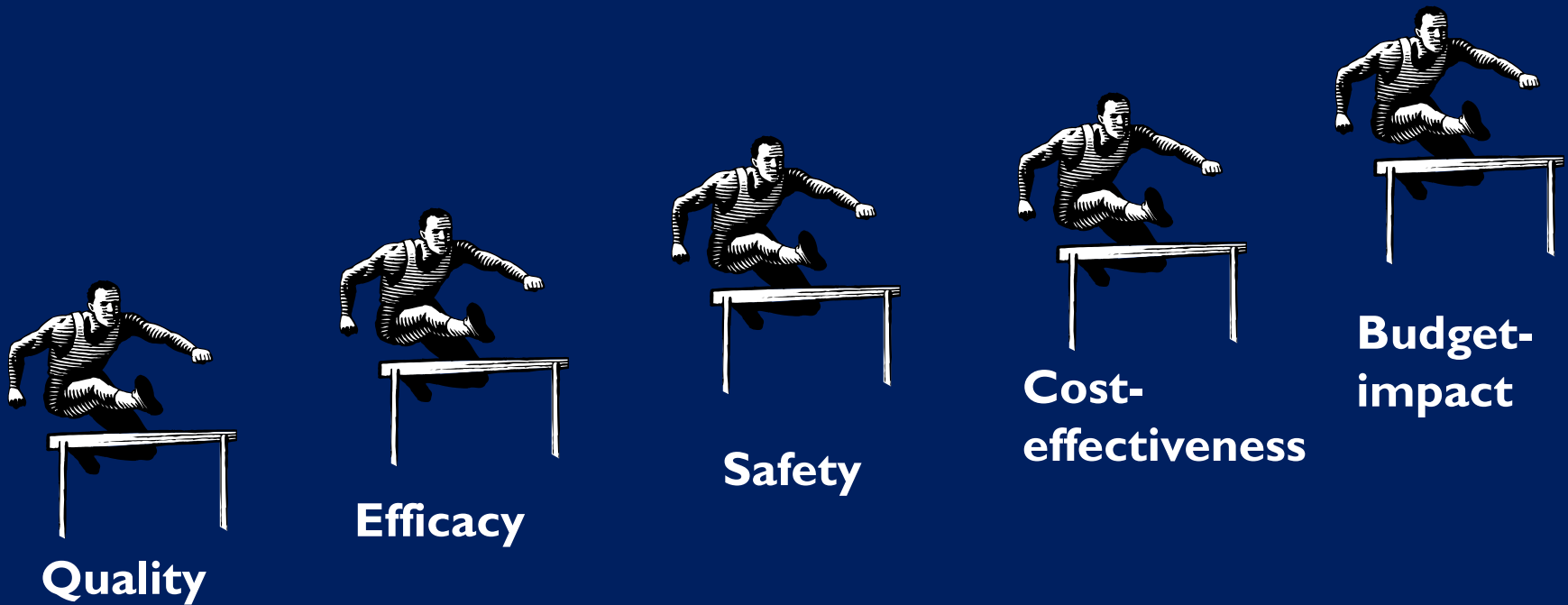
PE outcomes in CVD

- Cost effectiveness analyses (CEA):
  - Cost per life-year-gained (LYG)
  - Cost per event (MI, stroke) avoided

- Cost utility analyses (CUA):
  - Cost per QALY (quality adjusted life-year)
    - Cost per year in perfect health
    - QALY integrates quantitative (life expectation) and qualitative (quality of life) factors into a single index (QALY)

Statines in PE focus

- Perceived as „costly" treatment
  - Despite significant price fall due to generics
- Significant budget impact for payers
  - Large populations can/do profit from treatment

- **Cost/QALY (US market)**
  - Secondary prevention: 5 000 USD/QALY
  - Primary prevention: 20 000 USD/QALY
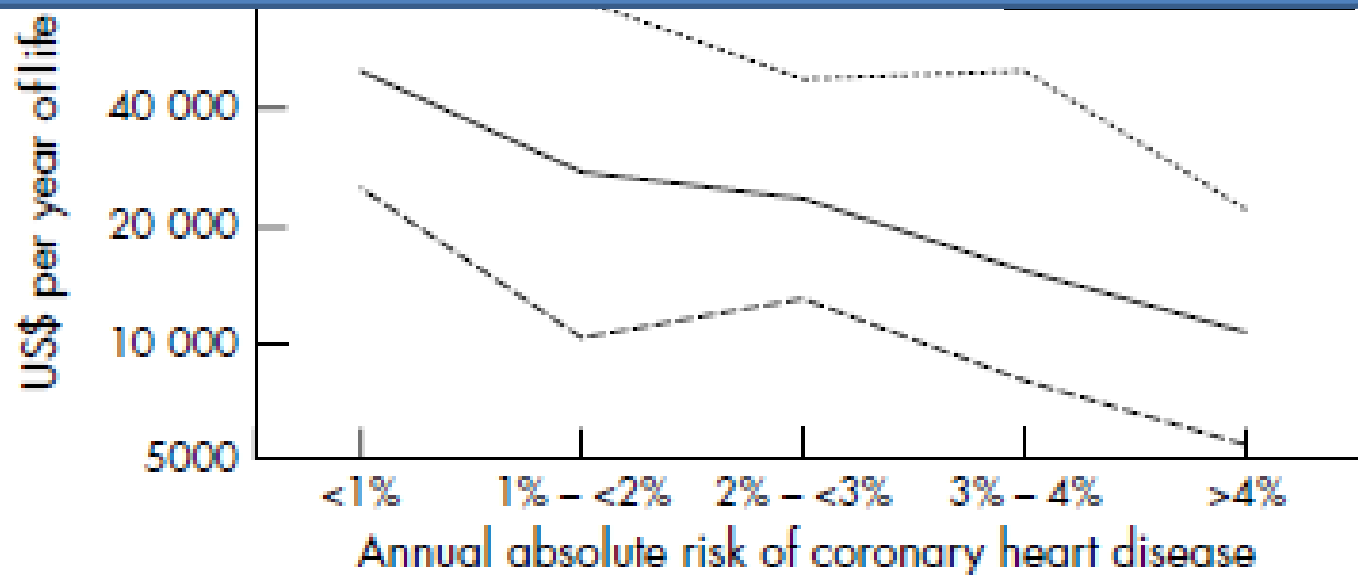- **Both below US WTP threshold**
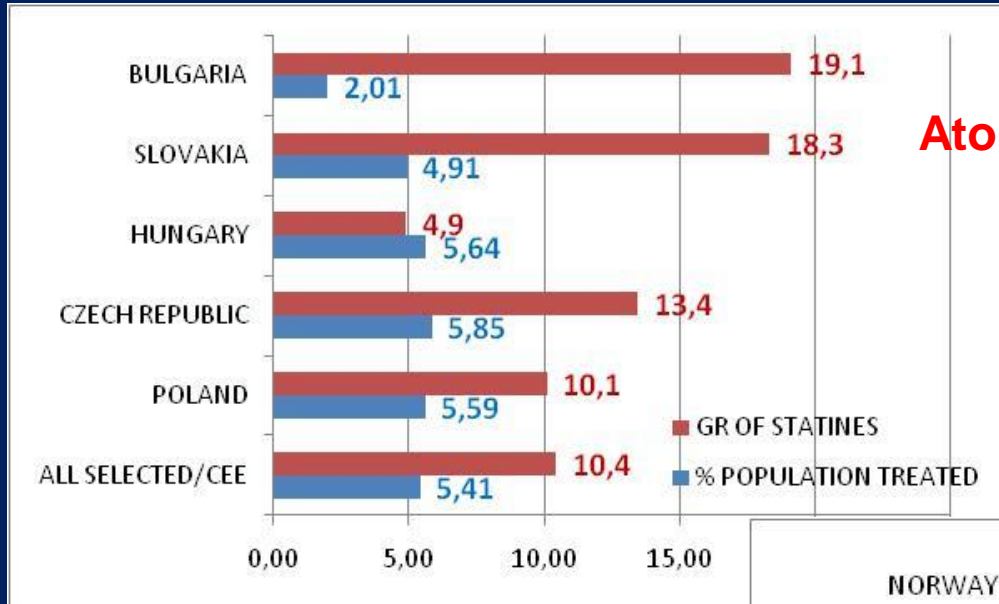
Statines CE

- CE dependent on innitial risk level
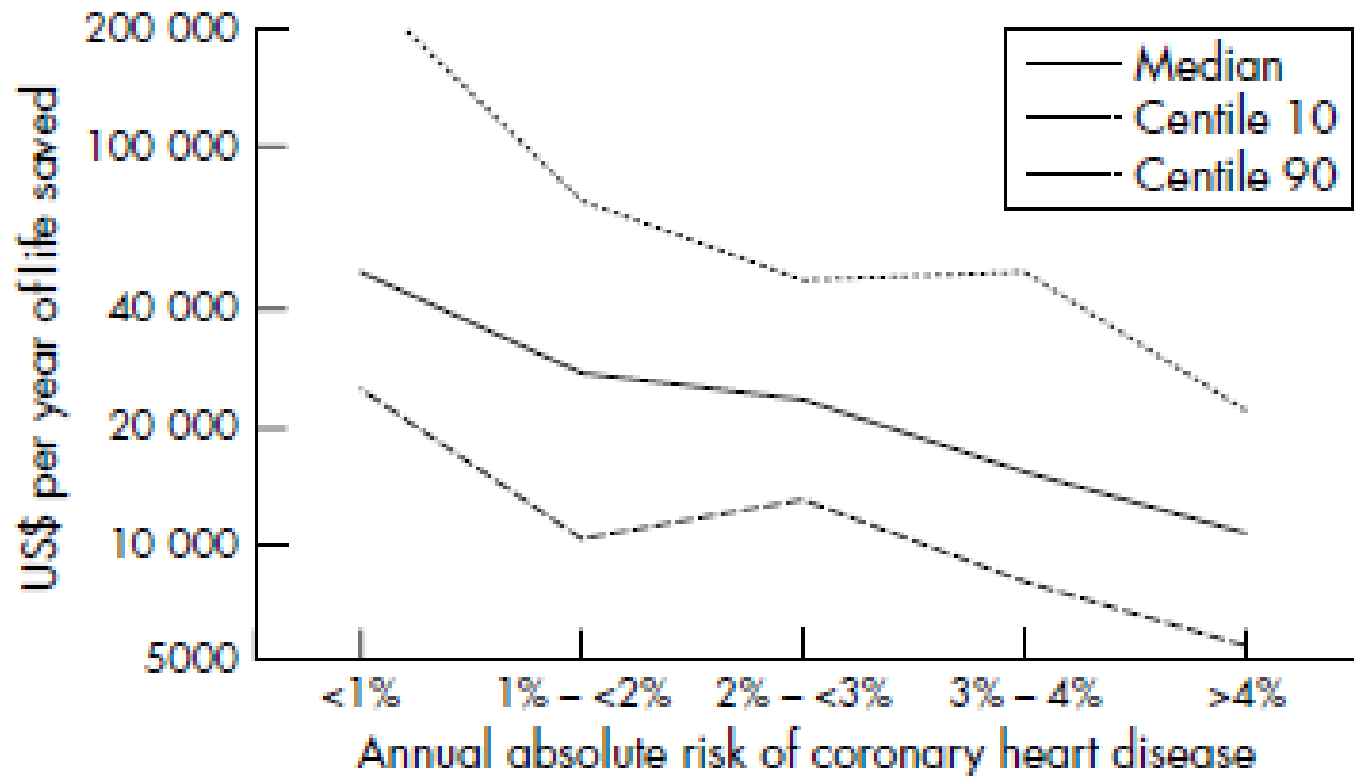
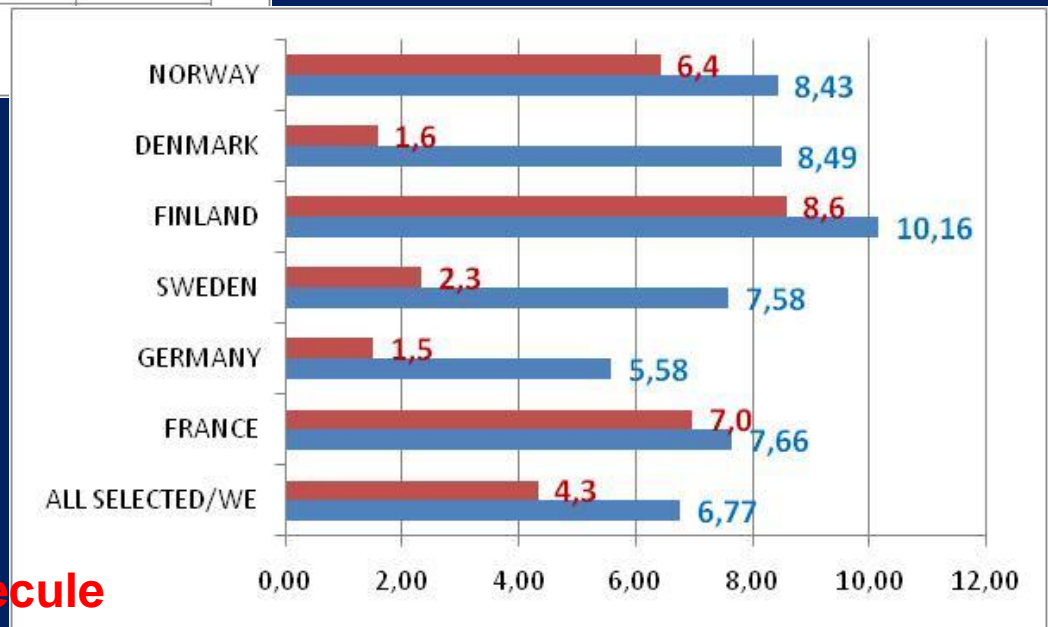# Statines CE

Adaptability for our local markets ?

Although costs per LYS in line with Czech estimates even for low risk.

% treated and annual growth

Atorvastatin – leading molecule

Chart (CEE countries):

Country	GR OF STATINES	% POPULATION TREATED
BULGARIA	19,1	2,01
SLOVAKIA	18,3	4,91
HUNGARY	4,9	5,64
CZECH REPUBLIC	13,4	5,85
POLAND	10,1	5,59
ALL SELECTED/CEE	10,4	5,41

Simvastatin – leading molecule

Chart (WE countries):

Country	GR OF STATINES	% POPULATION TREATED
NORWAY	6,4	8,43
DENMARK	1,6	8,49
FINLAND	8,6	10,16
SWEDEN	2,3	7,58
GERMANY	1,5	5,58
FRANCE	7,0	7,66
ALL SELECTED/WE	4,3	6,77

Rosuva vs. atorva comparison The Czech model

- **Olsson AG: Rosuva vs. atorva over 52 weeks in patients with hypercholesterolemia**

- Different risk levels

- Similar baseline characteristics

- Doses: Rosuva 5 and 10 mg, Atorva 10 mg

- Assessments - timing: W 2; W 12; W 52

- Goals of treatment:
  - % of lowering LDL-C
  - % of goal achievement

Treatment outcomes

|	ROS 5 MG	ROS 10 MG	ATO 10 MG
LDL-C reduction W2 (%):	41%	46%	35%
LDL-C reduction W12 (%):	46%	50%	39%
LDL-C goal attainment W52 (%)*:	88%	98%	87%
Mean statine dose - mg/day (W12-52):	9,3	13,4	20,8

* Goal NCEP ATP-II

- Similar proportion of discontinuation in both groups

- Similar safety profile in both groups

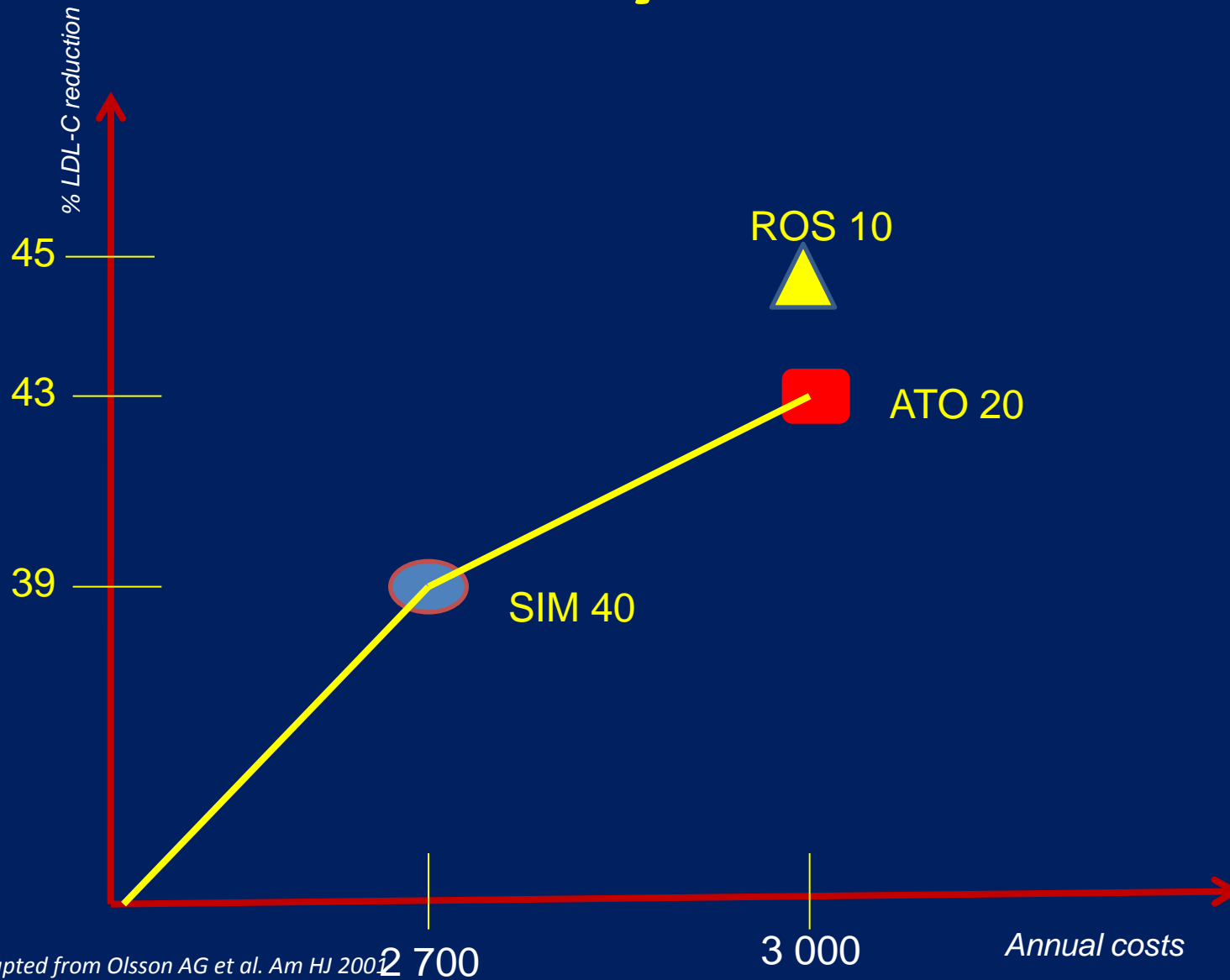*Source: Olsson AG et al. Am HJ 2001*

Czech reimbursement model

- Reimbursement:
  - Rosuvastatin 5 MG/tbl: 6,171 CZK
  - Rosuvastatin 10 MG/tbl: 8,23 CZK
  - Atorvastatin 10 MG/tbl: 6,171 CZK

- **CE per 1 % reduction of LDL-C (W12):**
  - Costs per period/ % reduction
- **CE per LDL-C goal attainment (W52):**
  - Costs per period/probability of goal attainment
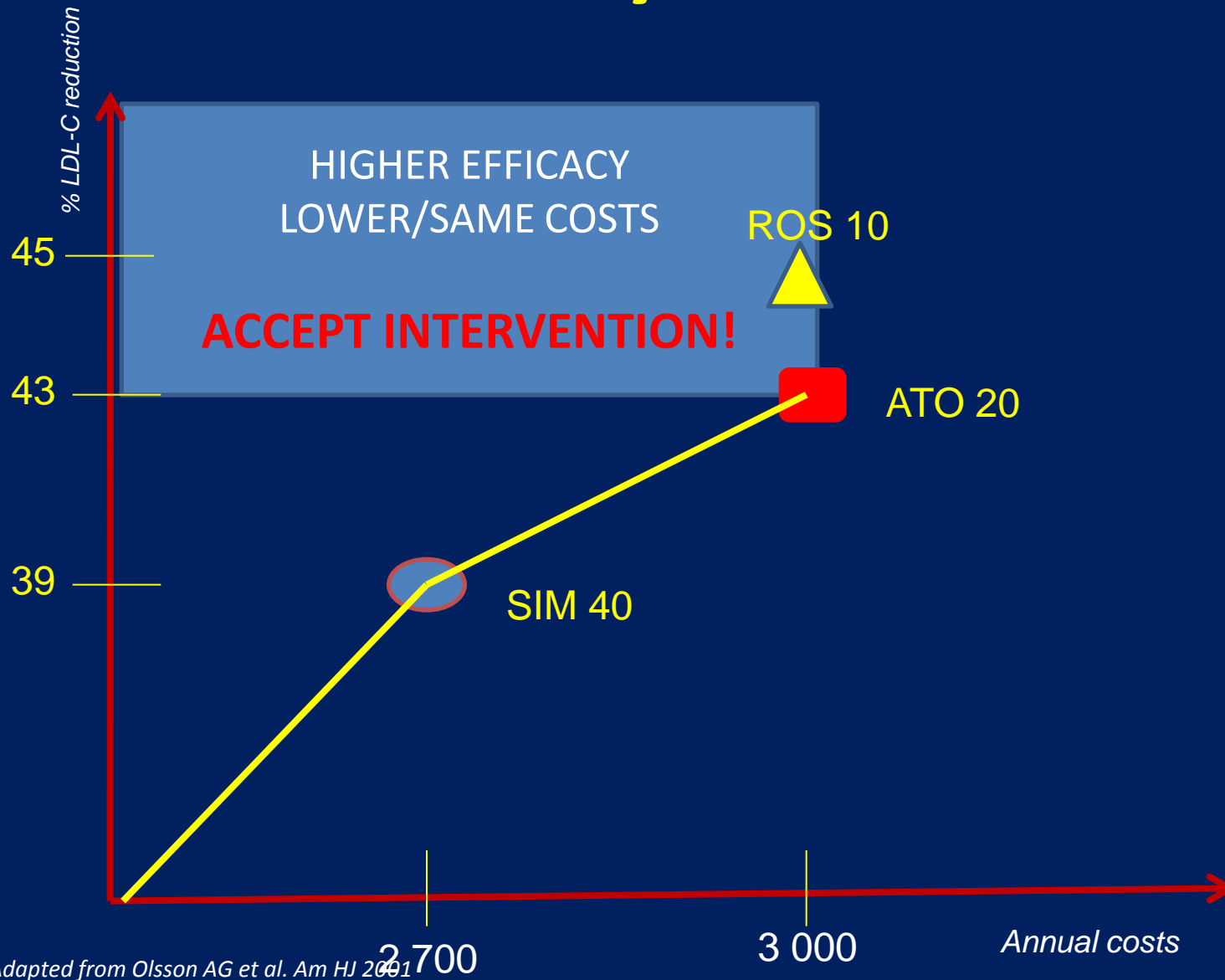
CE outcomes
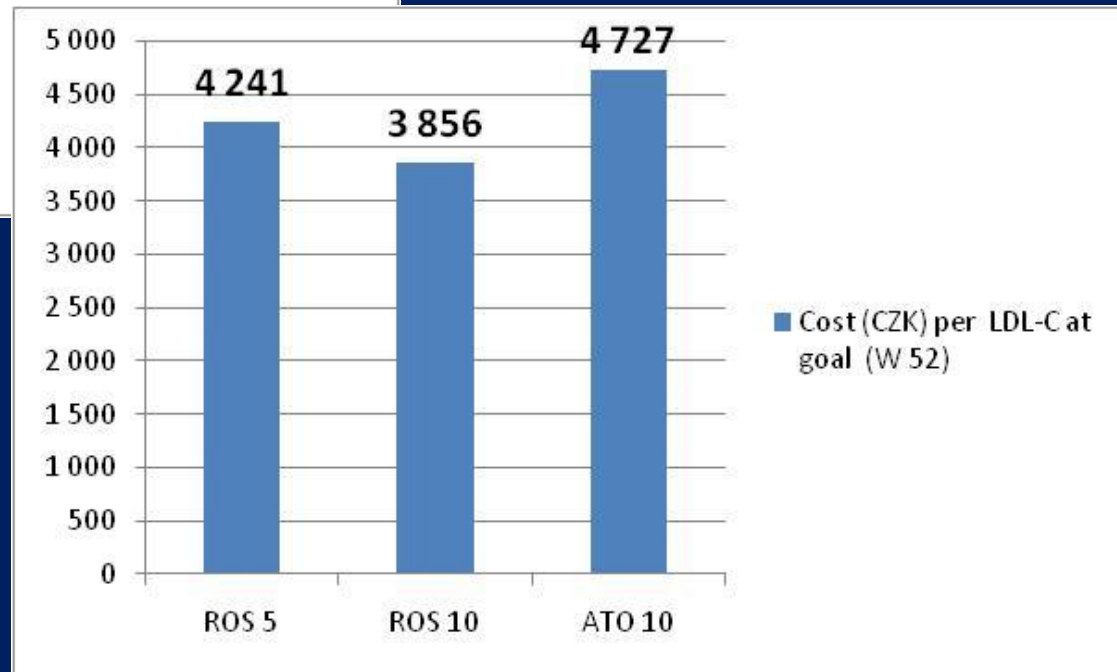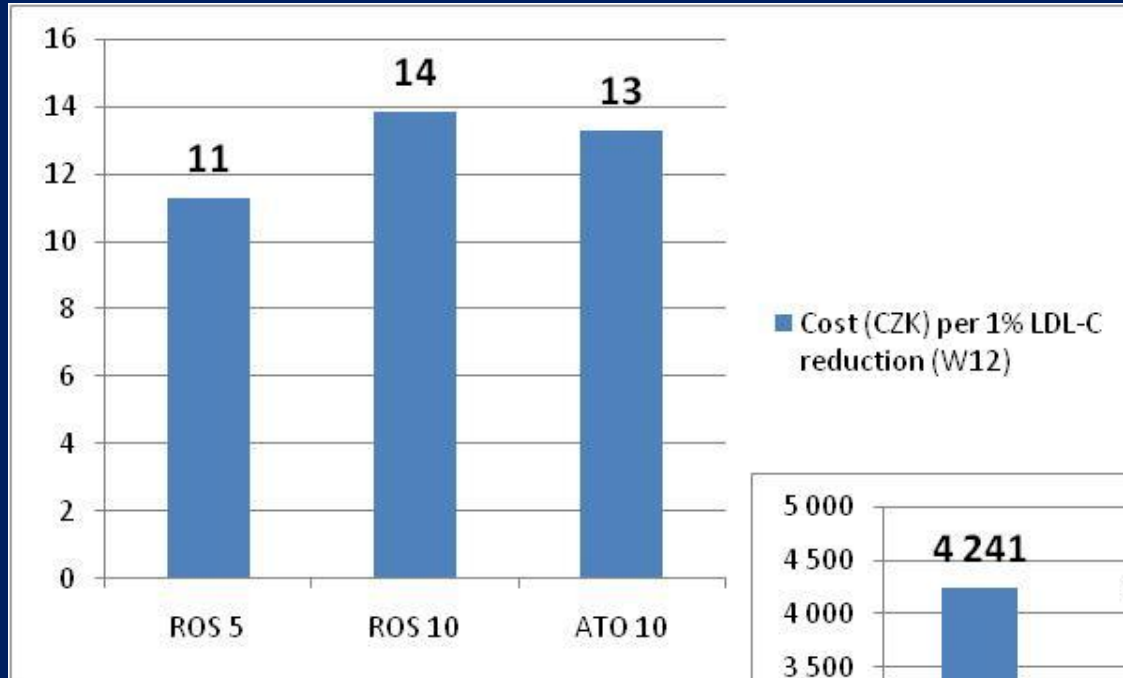
Source: Adapted from Olsson AG et al. Am HJ 2001

Efficiency frontier

% LDL-C reduction

ROS 10

45

43 — ATO 20

39 — SIM 40

2 700   3 000   *Annual costs*

Efficiency frontier

% LDL-C reduction

HIGHER EFFICACY
LOWER/SAME COSTS

ACCEPT INTERVENTION!

ROS 10

ATO 20

SIM 40

45

43

39

2 700

3 000

Annual costs

Source: Adapted from Olsson AG et al. Am HJ 2001
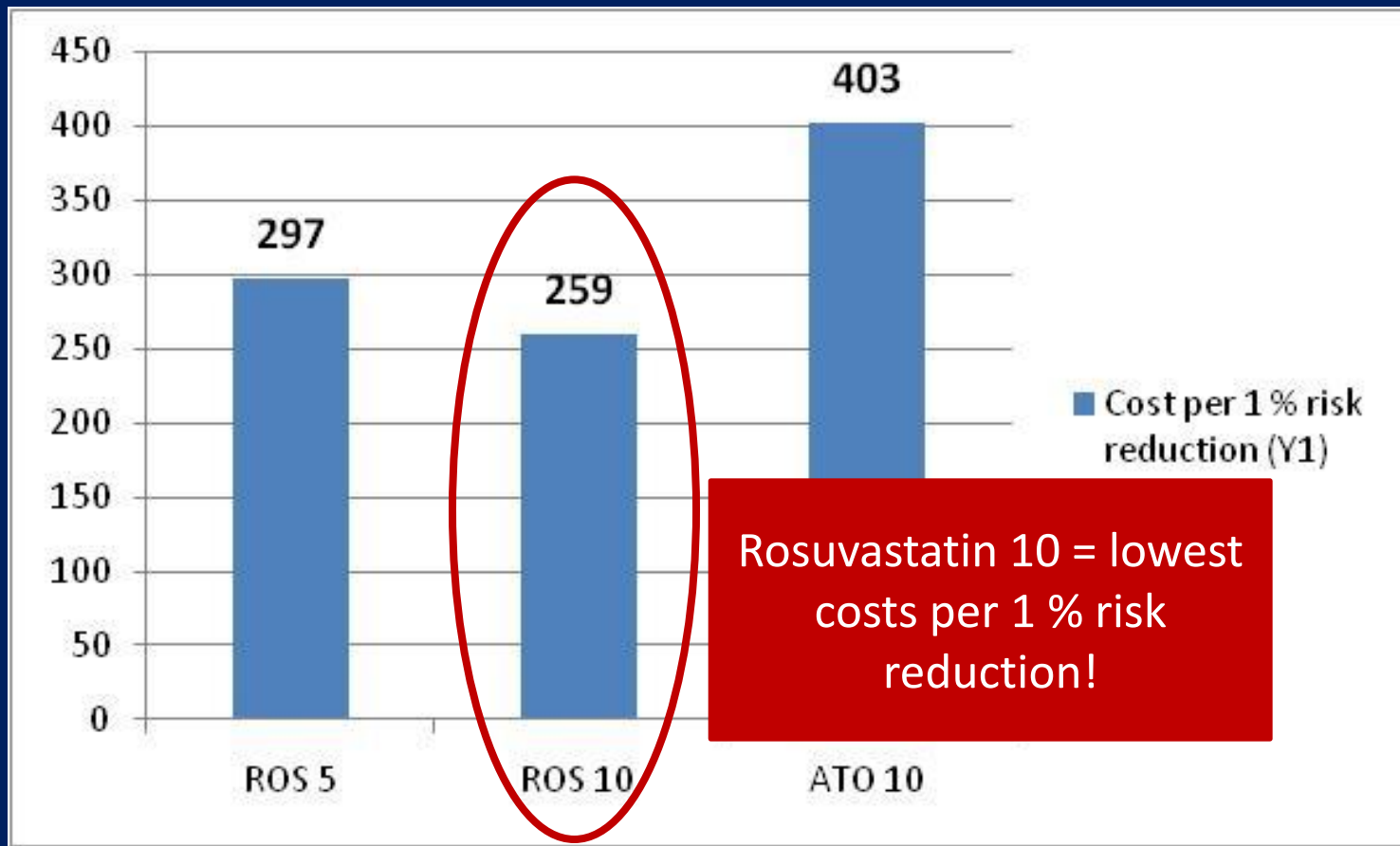
CV event risk reduction

- CV event reduction – major CE outcome parameter

- LDL-C reduction by 1 mg/dl reduces event risk by*

  – **0,16 % (Year 1)**

- Assuming that W12 LDL-C reduction is carried forward to W52 (Olsson)

- Assumed costs for 52 weeks treatment (Olsson)

Source: Adapted from Heart Protection Study

CZK per 1 % risk reduction
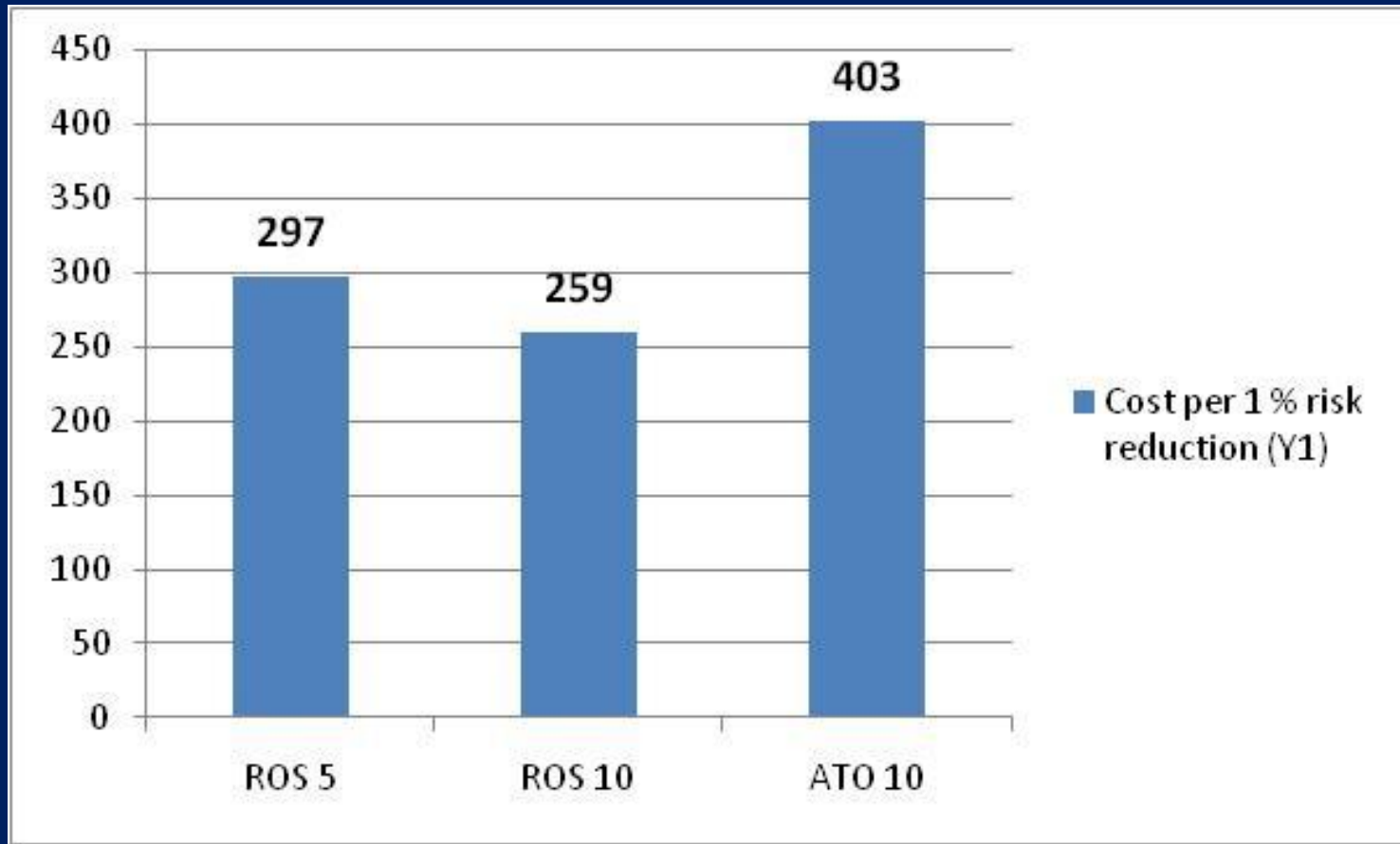
CZK per 1 % risk reduction

CE for goal attainment
(Canadian Model based on efficacy from STELLAR)

STATINE DOSE	Reimb per day	Reimb per year	*% LDL-C decrease*	Cost per % LDL-C decrease	*Percent achieving goal LDL-C*	Cost per achieving goal LDL-C
Rosuvastatin						
10 mg	8,23	2 996	45,87	65,31	85	3 524
20 mg	10,97	3 993	52,34	76,29	91	4 388
40 mg	31,10	11 320	54,96	205,98	88	12 864
Atorvastatin						
10 mg	6,17	2 246	36,73	61,15	68	3 303
20 mg	8,23	2 996	42,57	70,37	78	3 841
40 mg	10,97	3 993	47,79	83,55	84	4 754
80 mg	31,10	11 320	51,05	221,75	86	13 163
Simvastatin						
10 mg	4,21	1 532	28,30	54,15	66	2 322
20 mg	5,61	2 042	34,98	58,38	71	2 876
40 mg	7,49	2 726	38,81	70,25	66	4 131
Pravastatin						
20 mg	4,21	1 532	24,29	63,09	65	2 358
40 mg	5,61	2 042	29,69	68,78	65	3 142

Goal based on Canadian guidelines

CE for goal attainment
(Canadian Model based on efficacy from STELLAR)

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Rosuvastatin DOMINANT if goal attainment is the relevant outcome!

LDL-C goal seems to be the most appropriate parameter for statin treatment!

Source: Adapted from Costa-Scharplatz et al. Clinical Therapeutics 2008

Importance of goal attainment

S-CARD project: 6 753 treated for mean of 8.8 months. Simvastatin 20 starting dose

Source: S-CARD; Poster 420 at WONCA Ljubljana 2003
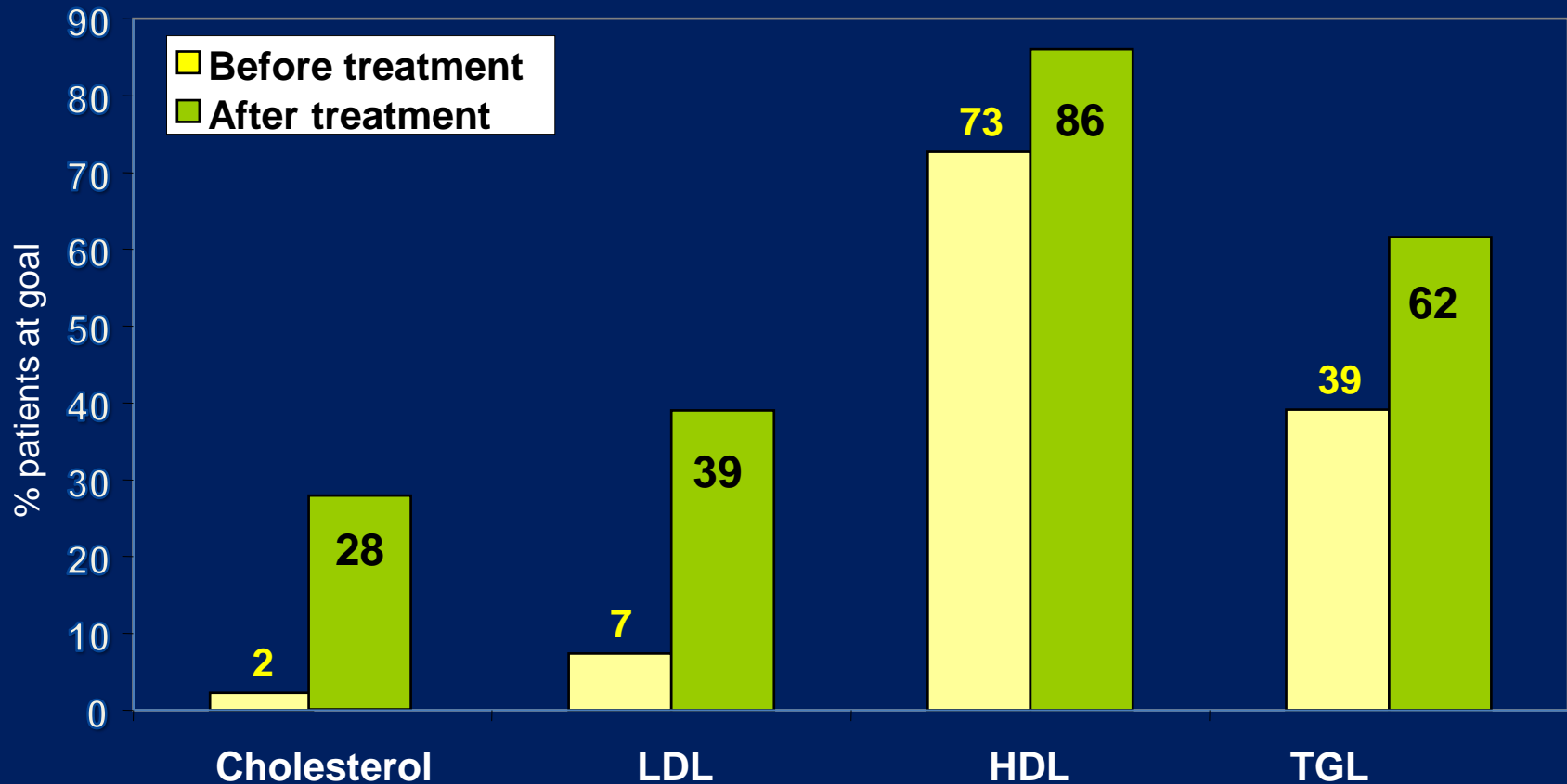
Summary and conclusions

- Despite high CV morbidity and mortality
  - Low health-care expenditures vs. Western Europe
  - Lower but fast growing statin penetration
  - „Best in class" therapy as standard (atorvastatin)
- Generic rosuvastatin enables to further uplift treatment standards offering „best value for money" (Czech Republic)
  - Costs per LDL-C reduction
  - Cost per patient at LDL goal
  - Cost per CV event avoided

Thank you for your attention!

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