



# Medicalization: can we meet the demand we have created ?

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# Discussion points

- Values and virtues
- Polypharmacy
- Health benefits
- Concept of opportunity costs
- Overdiagnosis and overtreatment
- Medicalization and pharmacratia
- Supplier induced demand

# Values and virtues

- Medicine – health benefit and no harm
- Ethics – right and wrong
- Economics – utility and resources
- Law – rights and obligations
  
- Fairness
- Justice
- Equality

“The rule of law is better than the rule of individual”  
Aristotle (384–322 BC)

## Disclosure of Interests

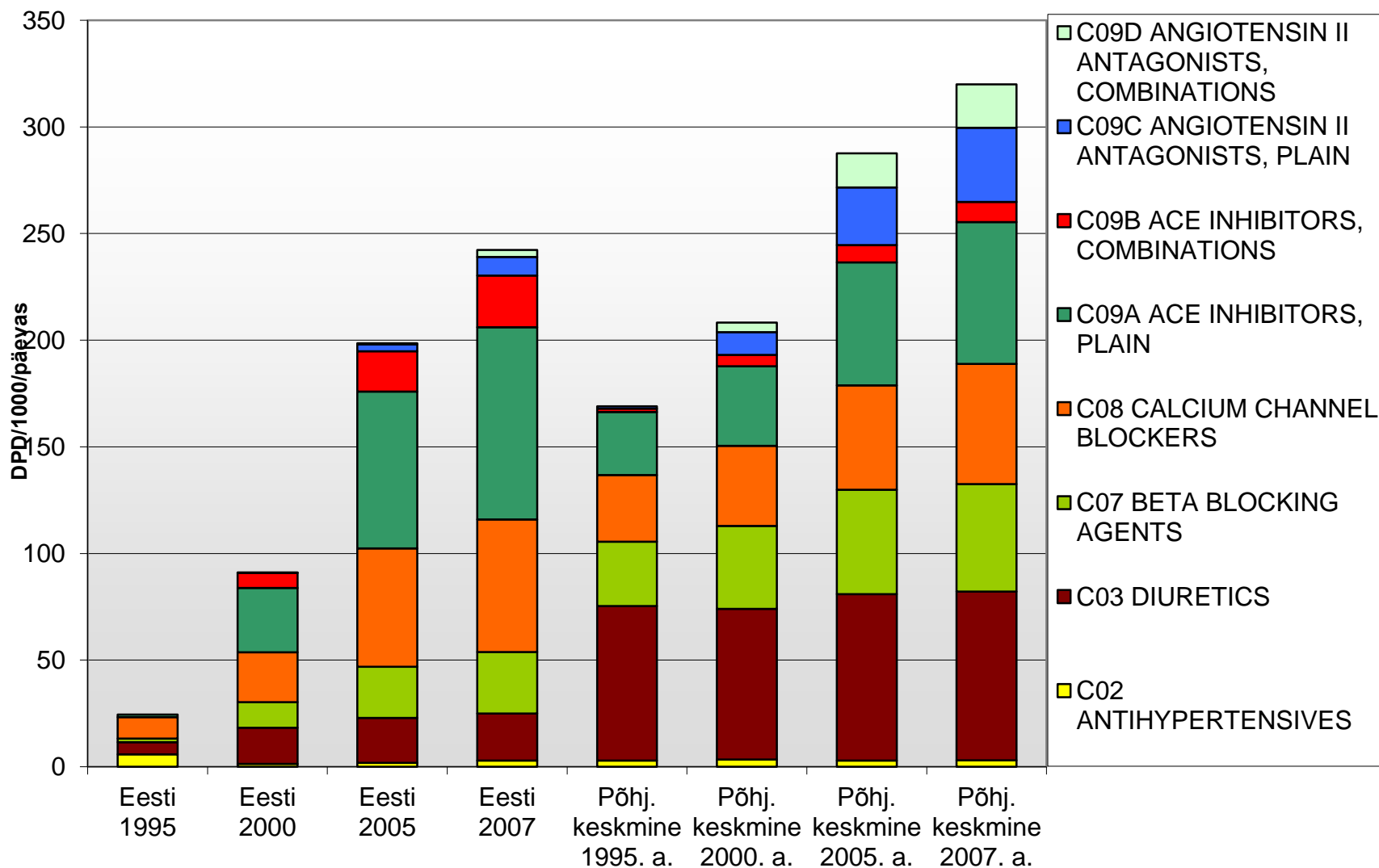
X	No financial or other relationships with a commercial interest producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients
	Yes, please specify:

<i>Company Name</i>	<i>Honoraria/ Expenses</i>	<i>Consulting/ Advisory Board</i>	<i>Funded Research</i>	<i>Royalties/ Patent</i>	<i>Stock Options</i>	<i>Ownership/ Equity Position</i>	<i>Employee</i>	<i>Other (please specify)</i>
Example: company XYZ								

Employment – University of Tartu

Funding of activities – government subsidies for higher education; national and EU grants for research; contracts for Ministry of Social Affairs.

# Use of antihypertensive drugs



**R. A. Kiivet · U. Bergman · L. Rootslane  
L. Rägo · F. Sjöqvist**

## **Drug use in Estonia in 1994–1995: a follow-up from 1989 and comparison with two Nordic countries**

Eur J Clin Pharmacol (1992) 42: 511–515

## **The use of drugs in Estonia compared to the Nordic countries**

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### Sales of medicinal products in total, DDD/1 000 inhabitants/day by ATC-group, 2013

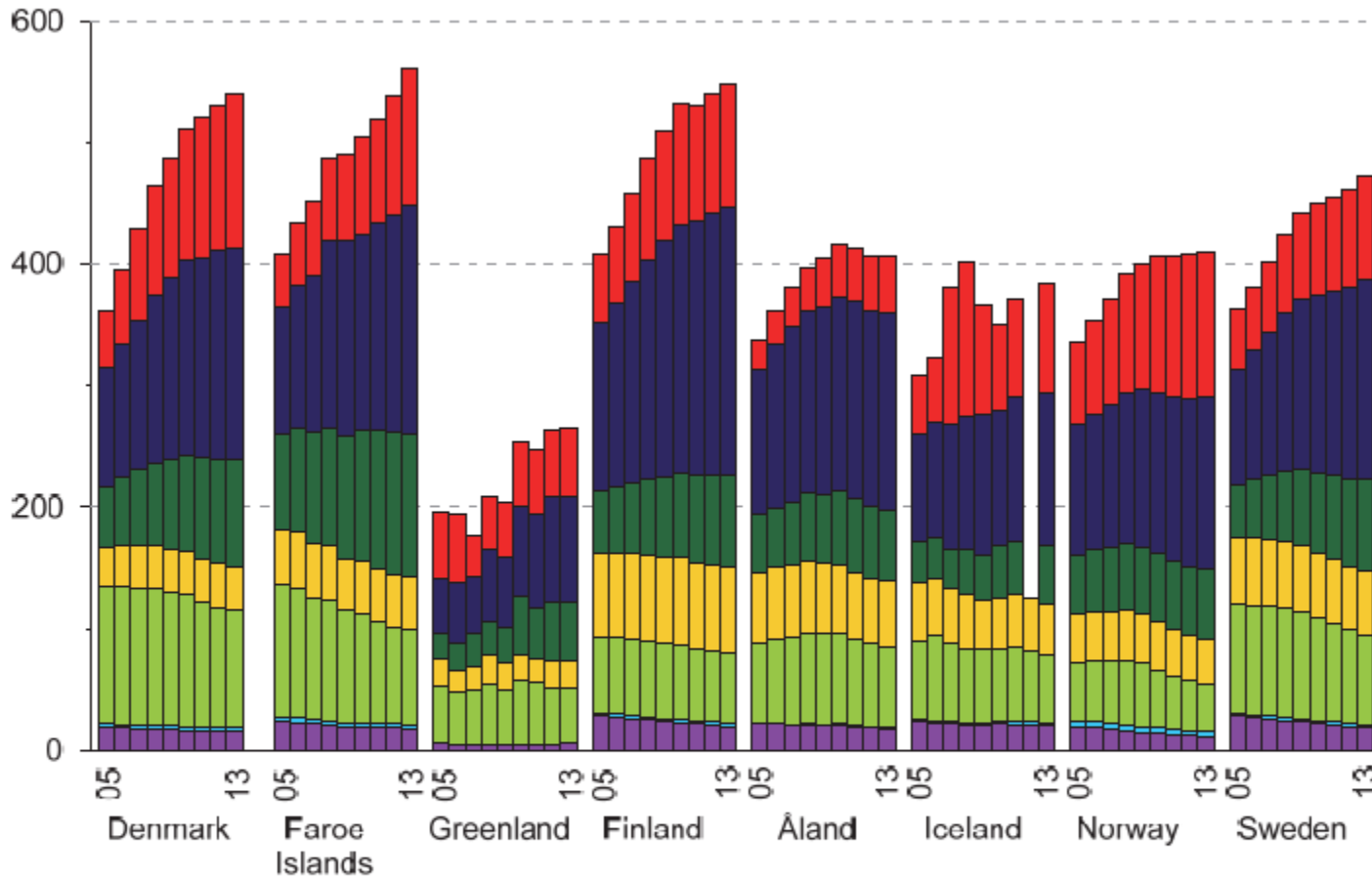
	DEN	FIN	ICE	NOR	SWE	EST	Nordic	EST/Nordic
A	162	265	173	196	225	147	204	72%
B	118	141	152	131	285	99	165	60%
C	540	548	385	410	473	413	471	88%
G	101	136	111	103	99	56	110	51%
H	32	51	41	45	43	24	42	57%
J	22	23	24	21	17	19	21	89%
L	17	17	16	17	18	10	17	59%
M	65	101	90	62	59	75	75	99%
N	272	266	355	228	276	106	279	38%
R	129	151	127	188	144	77	148	52%
S	12	20	16	19	23	26	18	144%
	<b>1470</b>	<b>1719</b>	<b>1490</b>	<b>1420</b>	<b>1662</b>	<b>1052</b>	<b>1552</b>	<b>68%</b>

**Sales of medicinal products in total, DDD/1 000 inhabitants/day**

	Estonia	Nordic mean	EST/Nordic	difference
1989	249	475	52%	226
1995	201	614	33%	413
2000	459	<b>1053</b>	44%	594
2005	719	1355	53%	636
2010	937	1481	63%	544
2013	<b>1052</b>	1552	68%	500
25 years	422%	327%		



Figure 3.7.3 Sales of cardiovascular drugs (ATC-group C), DDD/1 000 inhabitants/day, 2005-2013

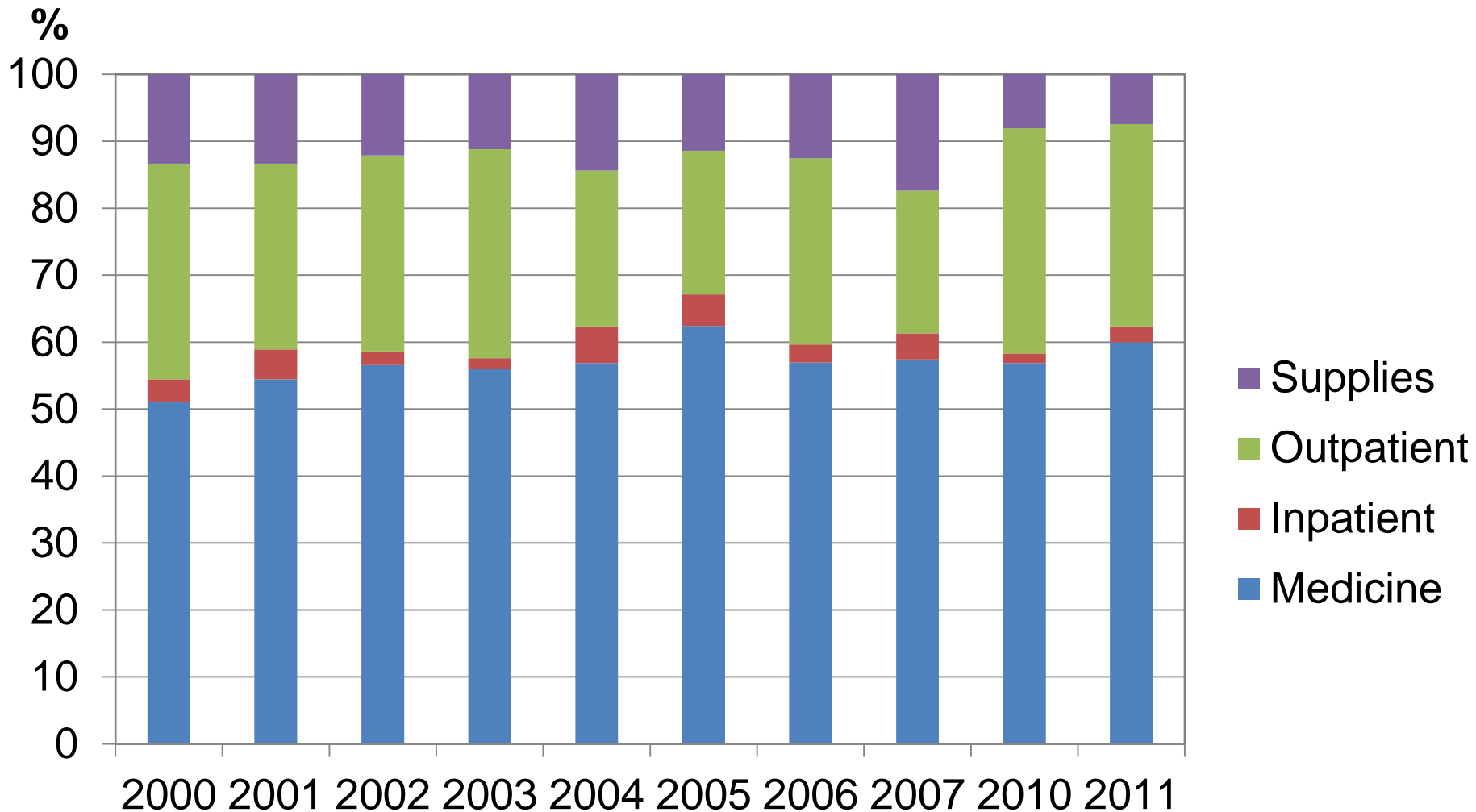


Estonia  
278  
DDDs  
in 2005

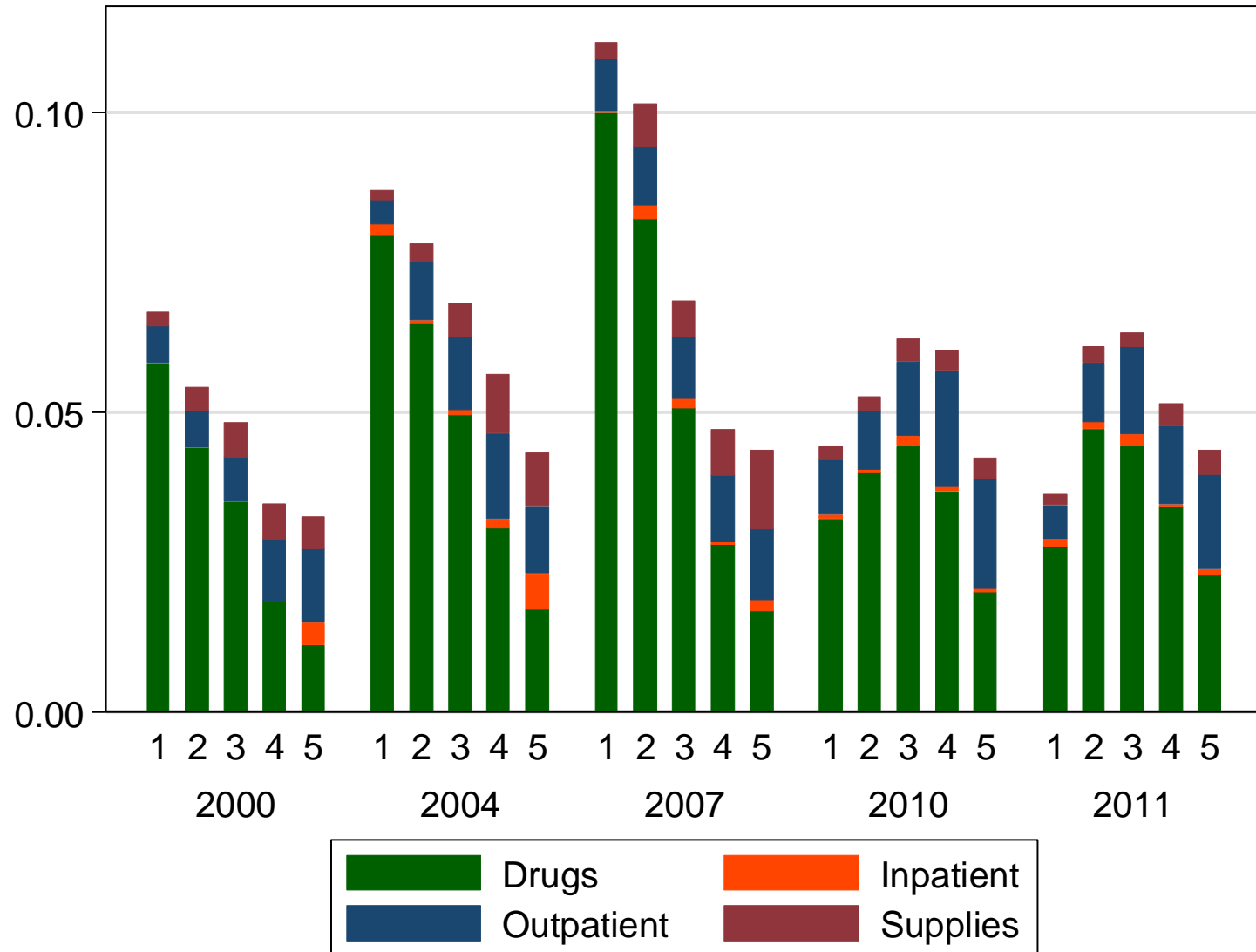
and  
413  
DDDs  
in 2013

- C01 Cardiac therapy
- C02 Antihypertensives
- C03 diuretics
- C07 Beta blocking agents
- C08 Calcium channel blockers
- C09 Agents acting on the renin-angioensin system
- C10 Lipid modifying agents

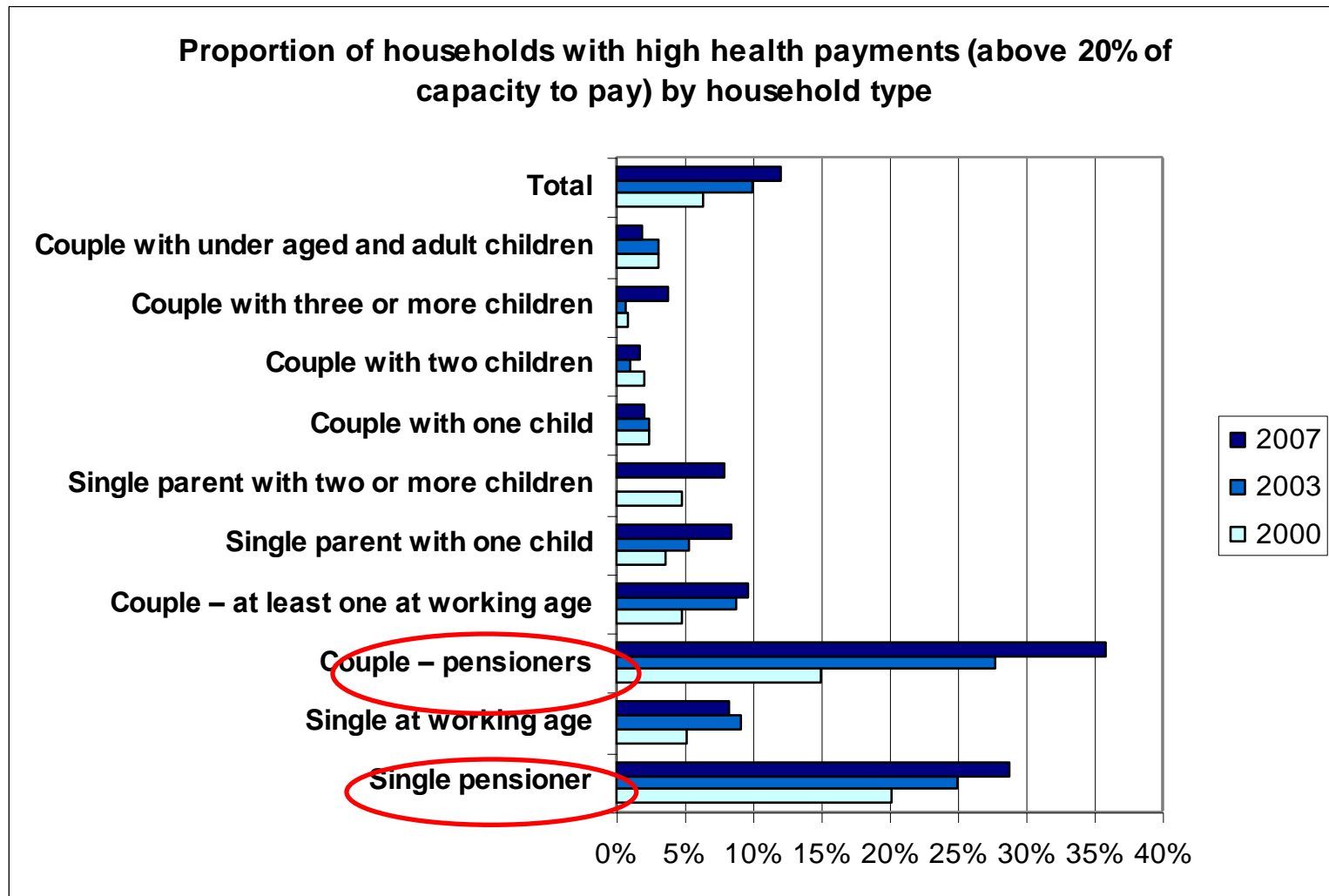
# Out-of-pocket payments in health care



# Drugs - main factor creating high health expenditures



# Retired persons have highest risk for poverty due to health care costs



# Out-of-pocket costs on medicines in 2009

- Total sales of prescription drugs 152 Meur
- Health Insurance covered 88 Meur (58%)
- Patient co-payment 63 Meur (42%)
- 75% are used by persons 65+ (retired/pension)
- In 2009 there were 360 000 on retired persons
- Average retired person (pensioner) spent 1 month income in 2009 to cover co-payment of reimbursed prescription medicines

## *Opportunity costs* (alternative cost)

- The loss of potential gain from other alternatives when one alternative is chosen
- The "cost" incurred by not enjoying the *benefit* that would be had by taking the second best choice available
- Opportunity costs are not restricted to monetary or financial costs, but real value, lost time or any other benefit that provides utility should also be considered opportunity costs.

"Time is Money", Benjamin Franklin (1706–1790)

# Randomised trial of cholesterol lowering in 4444 patients with coronary heart disease: the Scandinavian Simvastatin Survival Study (4S)

THE LANCET

Lancet 1994; 344: 1383-89

**NNT – number  
needed to treat**

During 5 years 3%  
of simvastatin users  
gained health  
benefit

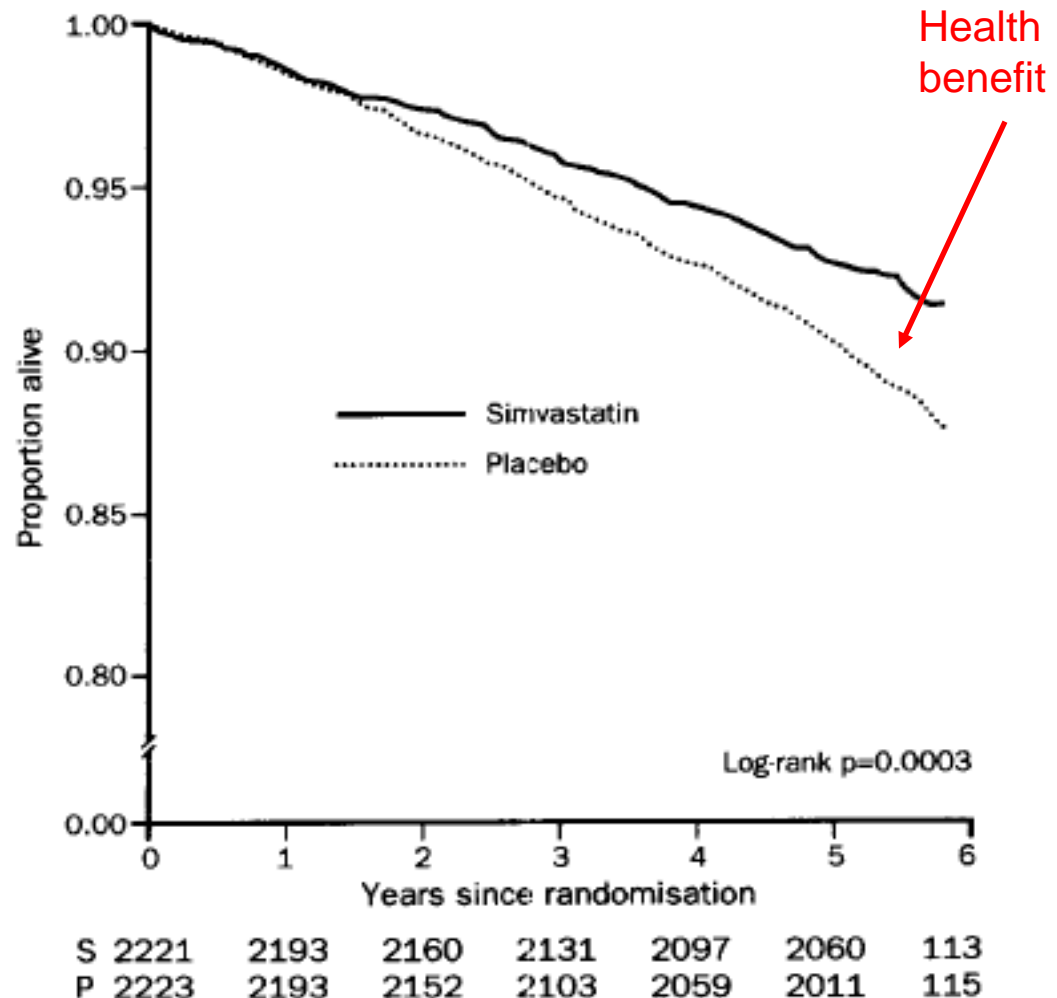


Figure 1: **Kaplan-Meier curves for all-cause mortality**

Number of patients at risk at the beginning of each year is shown below the horizontal axis.

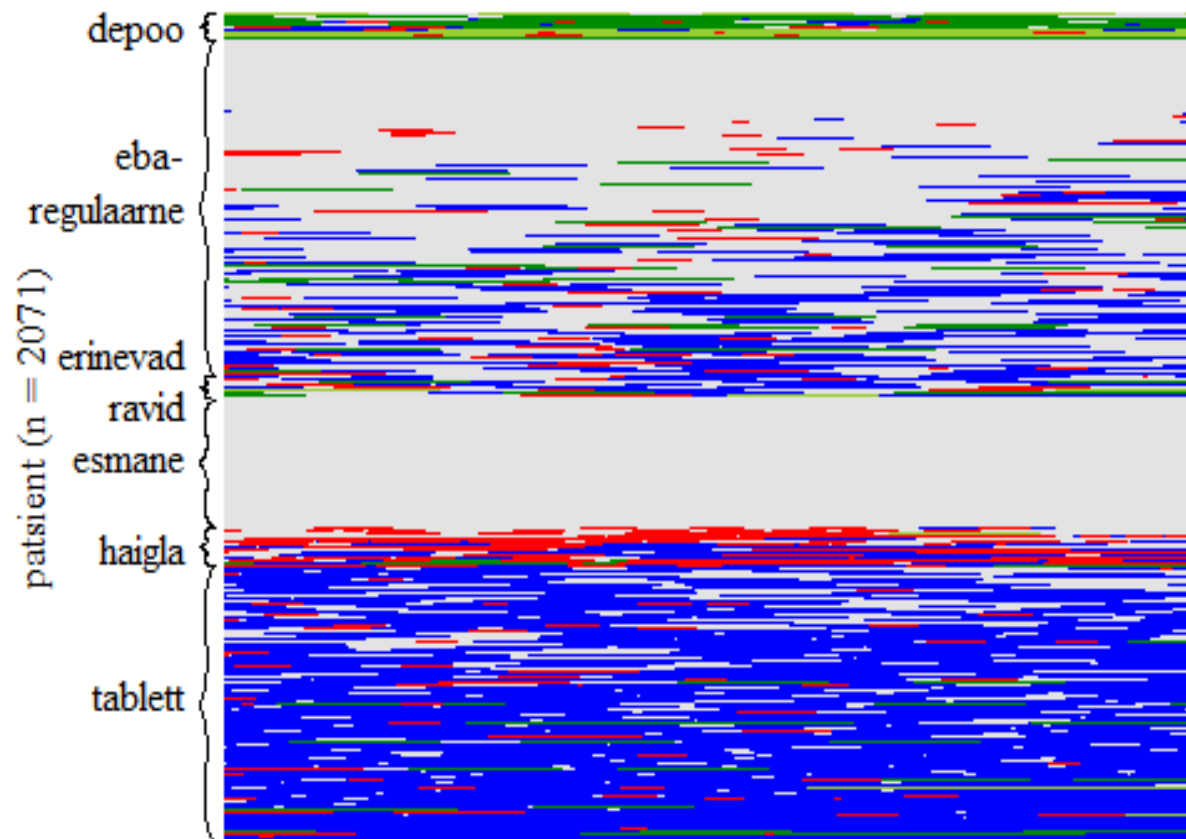
# Significant health gain (or marginal)

	Simvastatin	Placebo
Patients	2221	2223
Died in years	182	256
Alive after 5 years	2039	1967

Simvastatin „saved“ 72 lives, i.e. protected 3% of patients, but 182 died despite they took simvastatin

NNT = 31; 31 patients have to take simvastatin for 5 years in order to prevent 1 death

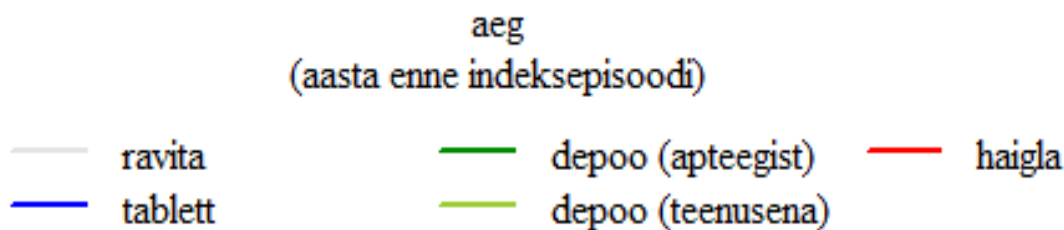




## Compliance and avoidable (hospital) care

Use of neuroleptics during 365 days prior to in 2012 hospitalization among 2071 schizophrenia patients in Estonia

green – depot  
blue – tablet  
red – hospital



40% irregular users  
40% good compliance

# Medicalization

- Is the process by which human conditions and problems come to be defined and treated as medical conditions, and thus become the subject of medical study, diagnosis, prevention or treatment
- Can be driven by new evidence or hypotheses about conditions; by changing social attitudes or economic considerations; or by the development of new medications or treatments.

# Overmedicalization

- Overmedicalization is altering the meaning or understanding of experiences, so that human problems are re-interpreted as medical problems requiring medical treatment, without net benefit to patients or citizens
- Birth and death of a human being is certified by medical doctors, who declare the start and end of a biological body and legal entity
- Alcohol overuse and drug addiction were for centuries a moral and individual problem, then became legal problems, and now are medical problems to be solved by dedicated medical services

# Overdetection

- A health related finding is detected in an (asymptomatic) person by a testing technology
- Finding indicates something that is temporary or would have regressed
- Physicians reflexively respond to receiving positive tests by ordering more tests
- Examples – ultrasound screening of thyroid has tripled the incidence (diagnosis and treatment) of thyroid cancer in thirty years, but the death rate has remained the same.
- Hypertension – from 160/100 to 140/90, but white-collar hypertension in 20-25% persons

# Overdiagnosis

- Diagnosis drives treatment
- An (asymptomatic) person is diagnosed with a condition, which does not produce symptoms or death or net benefit for the person, wasting resources while increasing patient anxiety.
- Examples – benign breast tumor detected via mammographic screening
- Reasons – use of technology to justify its expense; defensive medicine

# Expanded definitions and disease mongering

- Creating diseases out of behaviour or feelings that are within normal human experience, and promoting those diseases to the public to encourage use of health services, especially tests and medicines (*Carter 2015, BMJ 350:h869*)
- ADHD – Attention deficit hyperactivity disorder
- PMDD – premenstrual dysphoric disorder – medicalization of normal human function and behavior, when antidepressant fluoxetine (also known as Prozac) was being repackaged as a PMDD therapy under the trade name of Sarafem

# Willingness to pay

- Willingness to pay (WTP) is the maximum amount an individual is willing to sacrifice to gain utility (benefit) or avoid something undesirable
- WTP is usually constrained by individual's wealth
- But in a welfare state WTP for:
  - hospital care
  - public health
  - prescription-only medicines
  - chemotherapy in oncology

# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

AUGUST 19, 2010

VOL. 363 NO. 8

## Improved Survival with Ipilimumab in Patients with Metastatic Melanoma

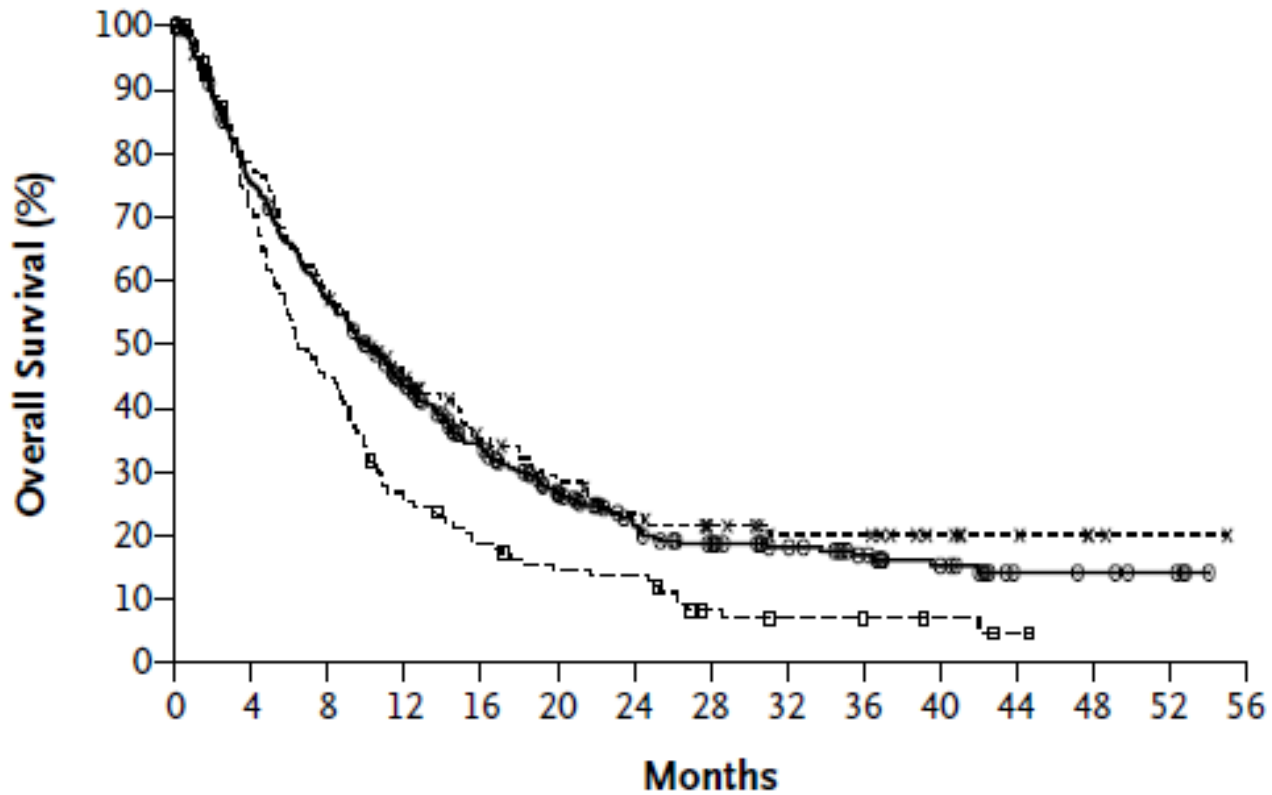
### RESULTS

The median overall survival was 10.0 months among patients receiving ipilimumab plus gp100, as compared with 6.4 months among patients receiving gp100 alone (hazard ratio for death, 0.68;  $P < 0.001$ ). The median overall survival with ipilimumab alone was 10.1 months (hazard ratio for death in the comparison with gp100 alone, 0.66;  $P = 0.003$ ). No difference in overall survival was detected between the ipilimumab groups (hazard ratio with ipilimumab plus gp100, 1.04;  $P = 0.76$ ). Grade 3 or 4 immune-related adverse events occurred in 10 to 15% of patients treated with ipilimumab and in 3% treated with gp100 alone. There were 14 deaths related to the study drugs (2.1%), and 7 were associated with immune-related adverse events.



— lpi plus gp100      - - - lpi      - - - gp100  
 ⊙ ⊙ ⊙ Censored      × × × Censored      □ □ □ Censored

### A Overall Survival



#### No. at Risk

lpi plus gp100	403	297	223	163	115	81	54	42	33	24	17	7	6	4	0
lpi	137	106	79	56	38	30	24	18	13	13	8	5	2	1	0
gp100	136	93	58	32	23	17	16	7	5	5	3	1	0	0	0

# Ipilimumab

- One of the first drugs to demonstrate efficacy in metastatic melanoma
- Hazard ratio for death 0.68
- Median overall survival with ipilimumab 10 months vs 6.4 months with standard therapy
- Alive after 2 years 20% vs 10% (health gain 1/10)
- Annual treatment cost USD 125,000
- UK NICE estimate 55,000–70,000£ per QALY

# Fear of death

- Fear of death treated as something that can be fixed with biotechnology rather than something requiring existential wisdom or common sense
- Examples – the idea of aging and dying as medical illnesses effectively "medicalized" human life and left individuals and societies less able to deal with these "natural" processes

# Supplier induced demand & Price elasticity

- Supplier induced demand – the amount of demand that exists beyond if the patients are fully informed
- Price elasticity of demand gives the percentage change in quantity demanded in response to a one percent change in price
- Price elasticities are almost always negative
- In health care it can be positive
  - da Vinci Surgical System
  - „innovative“ pharmaceuticals
  - Biotech products in oncology

# Amlodipine – brand vs 3 generics 2008

*(10mg 30 tabs, reference price 128.-)*

	Retail price	No of patients 16 502	Co-payment
Norvasc (Pfizer)	270.-	6214 <b>(38%)</b>	189.- <b>(3 times)</b>
Agen (Leciva)	139.-	3110	58.-
Amloca (Hexal)	139.-	3011	58.-
Ratiopharm	150.-	1953	70.-

# Olanzapine – brand vs 3 generics 2008

*(10mg 30 tabs, reference price 668.-)*

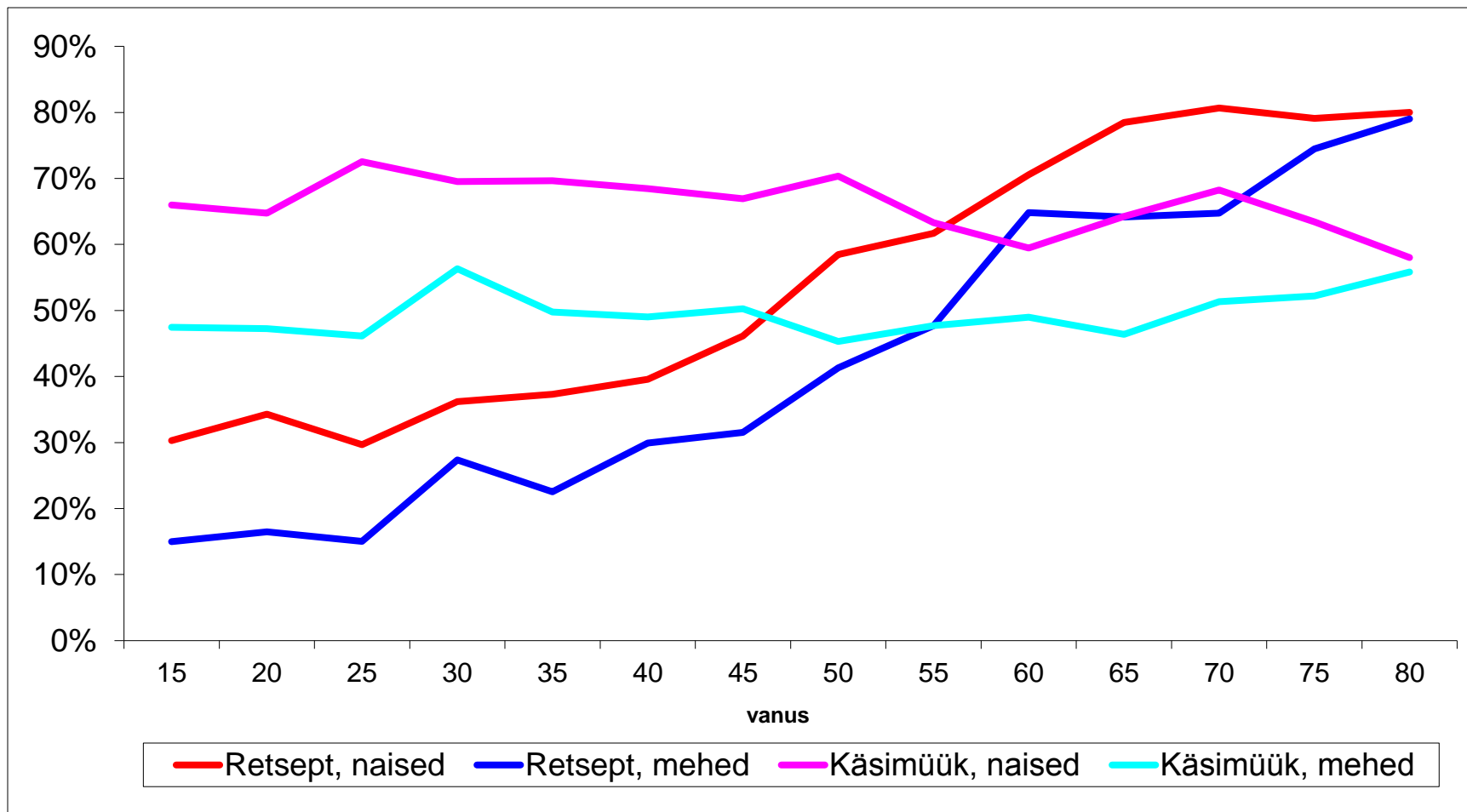
	Retail price	No of patients 556	Co-payment
Zyprexa (Eli Lilly)	1770.-	85 <b>(13%)</b>	1167.- <b>(58 times)</b>
Actavis	668.-	283	20.-
Ratiopharm	668.-	122	20.-
Adamed	668.-	151	20.-

# We can afford new treatments

- If we have more money for health care
- If we learn to stop ineffective treatments and disinvest ineffective technologies
- If we discontinue drugs, which have no effect, instead of adding new ones

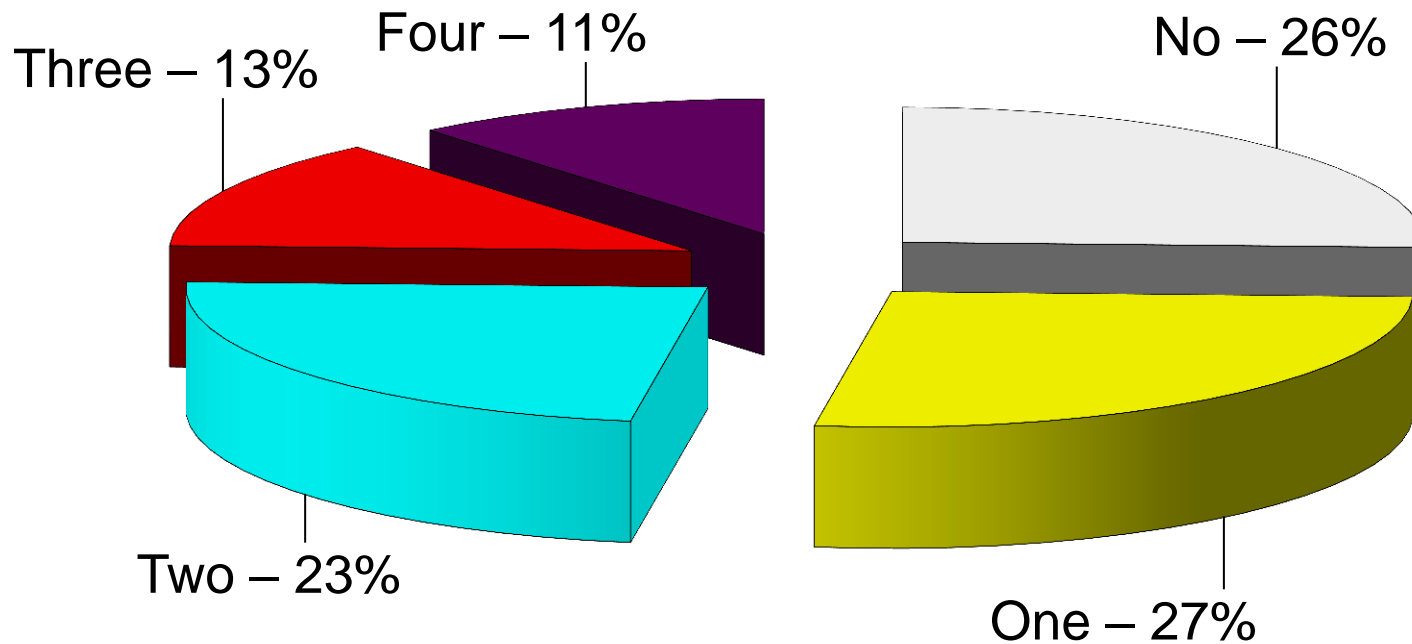
# Less men use medicines than women

## Use of OTC medicines does not depend on age





# Daily use of prescription medicines 65+ in Estonia



**Table 3.7.2 Sales of reimbursed medicines by gender and age, DDD/1 000 inhabitants/day, 2011**

Age	Denmark		Faroe Islands		Finland		Iceland		Norway		Sweden	
	M	W	M	W	M	W	M	W	M	W	M	W
0-14	69	47	57	44	85	62	14	9	96	60	91	67
15-24	128	173	120	145	181	262	16	34	146	342	184	537
25-44	320	411	324	369	471	554	59	91	304	365	384	710
45-64	1 342	1 372	1 401	1 225	1 555	1 617	187	234	1 217	1 184	1 511	1 722
65-74	2 993	2 812	3 480	2 784	2 982	2 745	108	119	2 694	2 417	3 630	3 492
75+	3 982	3 983	4 366	3 968	3 979	3 981	100	129	3 276	2 894	5 774	5 708

65+ consume daily 3–6 DDDs of prescription medicines

The desire to take medicine is perhaps the greatest feature which distinguishes man from animals

*(sir William Osler 1849–1919)*

*founder of Johns Hopkins School of Medicine (Baltimore, US);  
established the first residency program for specialty training  
of physicians;*

*he was the first to bring medical students out of the lecture  
hall for bedside clinical training*

*created the 1st formal journal club at McGill University*

# Conclusions

- Medicine is an uncertain practice and may be harmful
- Attending harms is as important as attending the benefits
- The harms are not limited to physical injury, but include social, psychological and economical side-effects, that are not so easy to capture

Less is more