Medicalization: can we meet the demand we have created ?

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Raul Kiivet, MD, PhD
University of Tartu, Department of Public Health
Professor of Health Care Management

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)

EACPT European Association for Clinical Pharmacology and Therapeutics

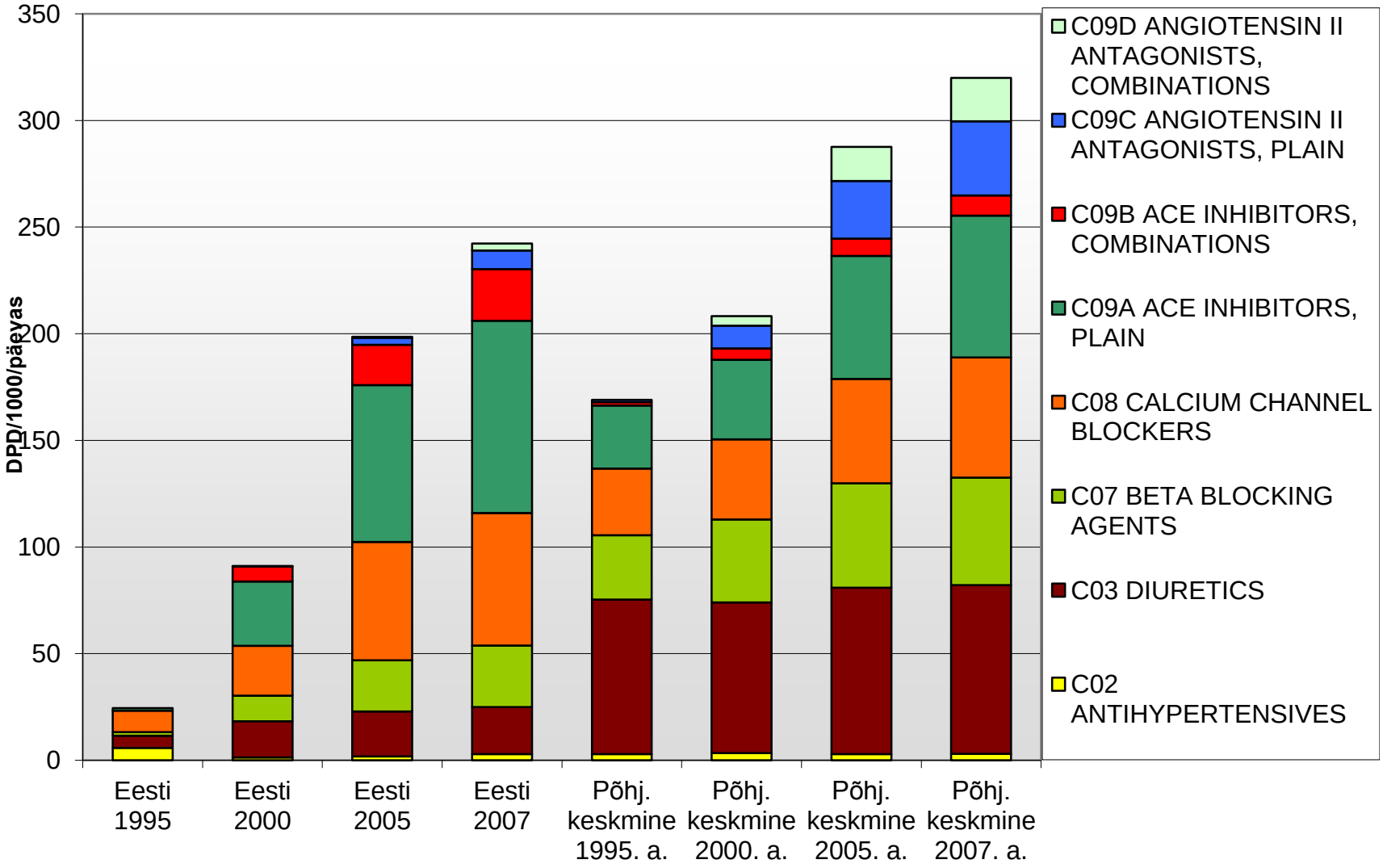
Disclosure of Interests

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:

Company Name	*Honoraria/ Expenses*	*Consulting/ Advisory Board*	*Funded Research*	*Royalties/ Patent*	*Stock Options*	*Ownership/ Equity Position*	*Employee*	*Other (please specify)*
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



Eur J Clin Pharmacol (1998) 54: 119–124

PHARMACOEPIDEMIOLOGY AND PRESCRIPTION

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

R. A. Kiivet[1], U. Bergman[2], and F. Sjöqvist[2]

[1] Department of Pharmacology, Tartu University, Tartu, Estonia and [2] Department of Clinical Pharmacology, Huddinge University Hospital, Karolinska Institute, Huddinge, Sweden

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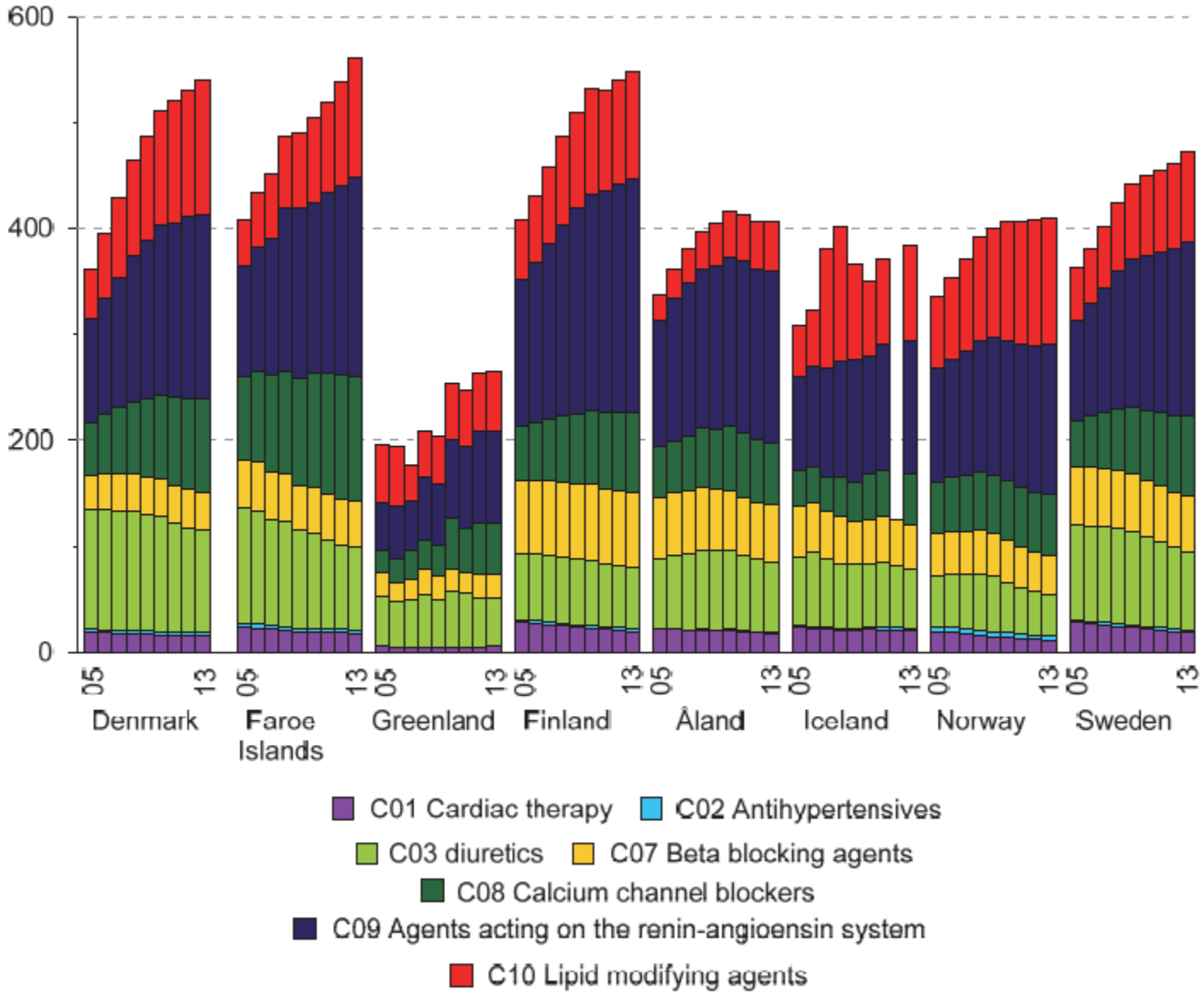
Sales of medicinal products in total, DDD/1 000 inhabitants/day by ATC-group, 2013

	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%
	1470	**1719**	**1490**	**1420**	**1662**	**1052**	**1552**	68%

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	**1053**	44%	594
2005	719	1355	53%	636
2010	937	1481	63%	544
2013	**1052**	1552	68%	500
25 years	422%	327%		

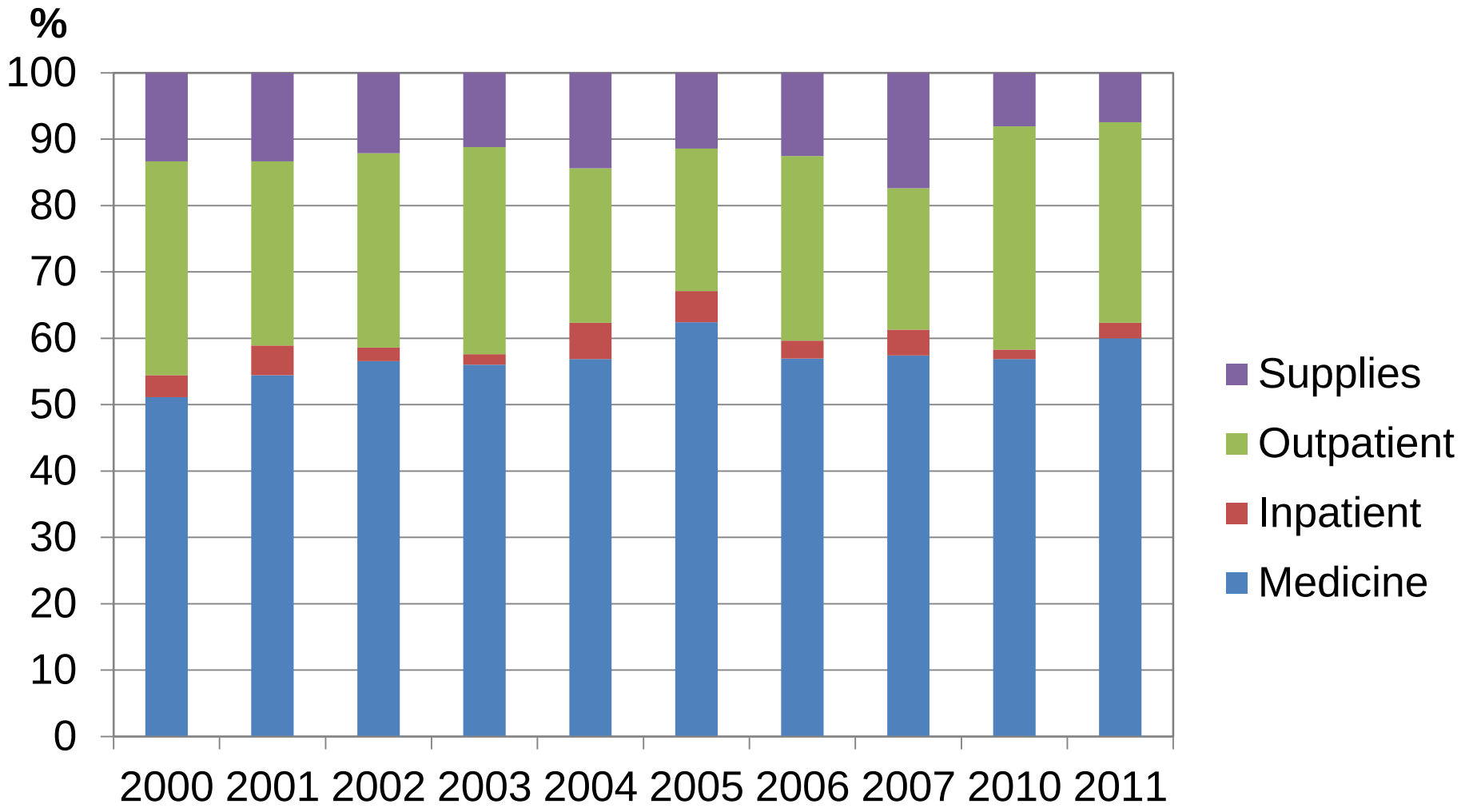
Figure 3.7.3 Sales of cardiovascular drugs (ATC-group C), DDD/1 000 inhabitants/day, 2005-2013



Estonia
278
DDDs
in 2005

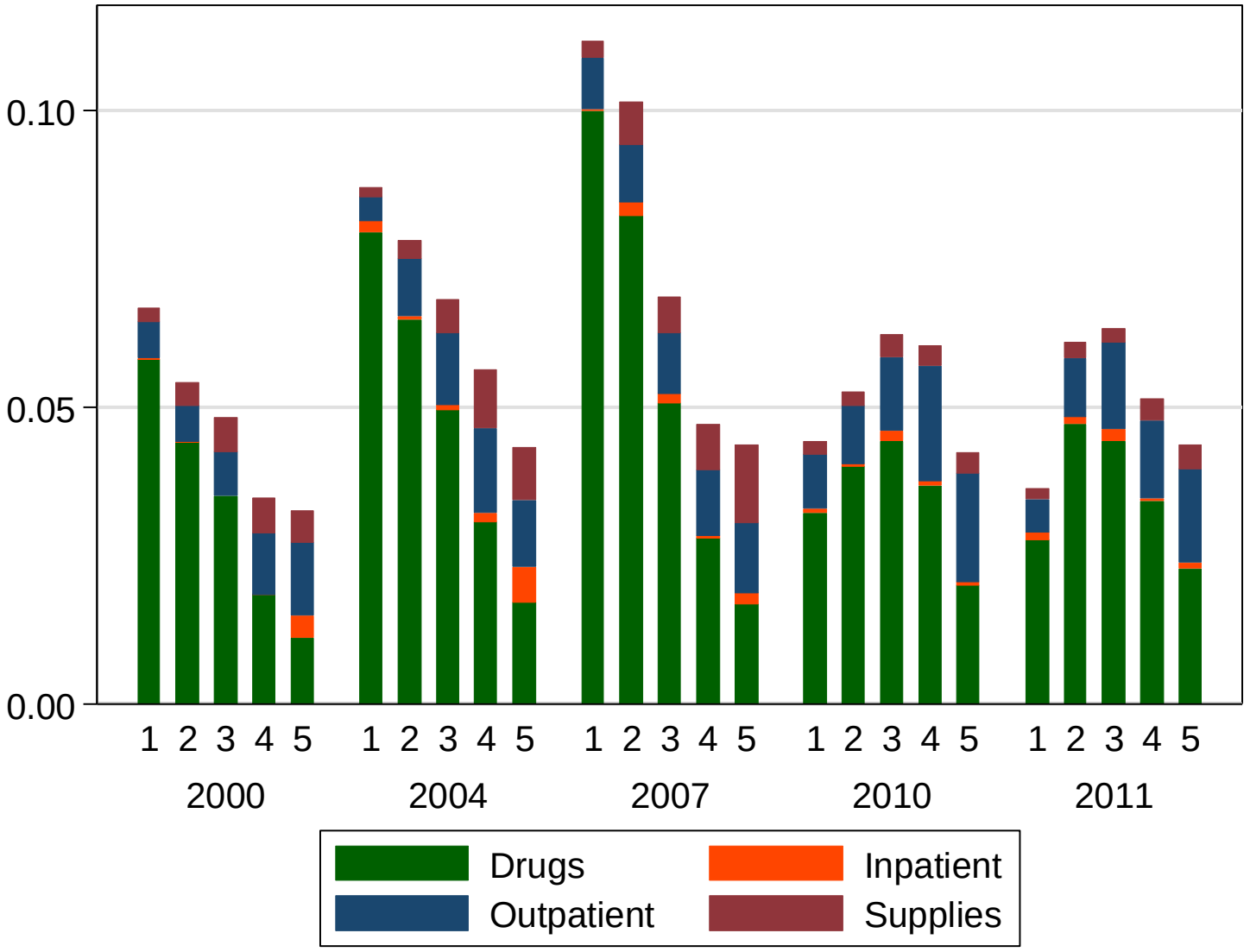
and
413
DDDs
in 2013

Out-of-pocket payments in health care



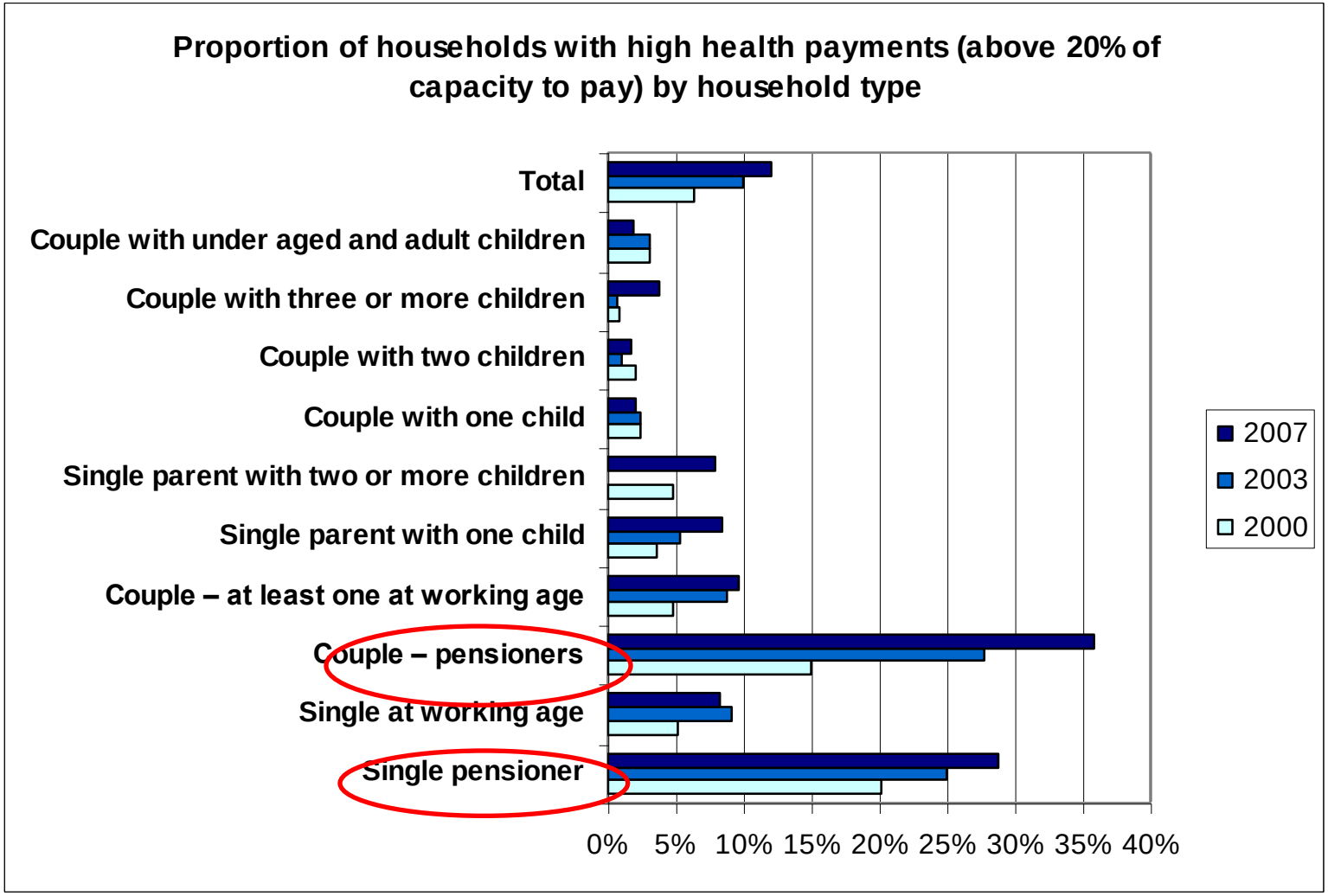
Source: Estonian HBS, own calculations

Drugs - main factor creating high health expenditures



Source: Estonian HBS, own calculations

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



Allikas: Võrk A, Saluse J, Habicht J. Income-related inequality in health care financing and utilization in Estonia 2000–2007. WHO Europe 2009 (forthcoming)

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)

Lancet 1994; **344:** 1383–89

NNT – number needed to treat

During 5 years 3% of simvastatin users gained health benefit

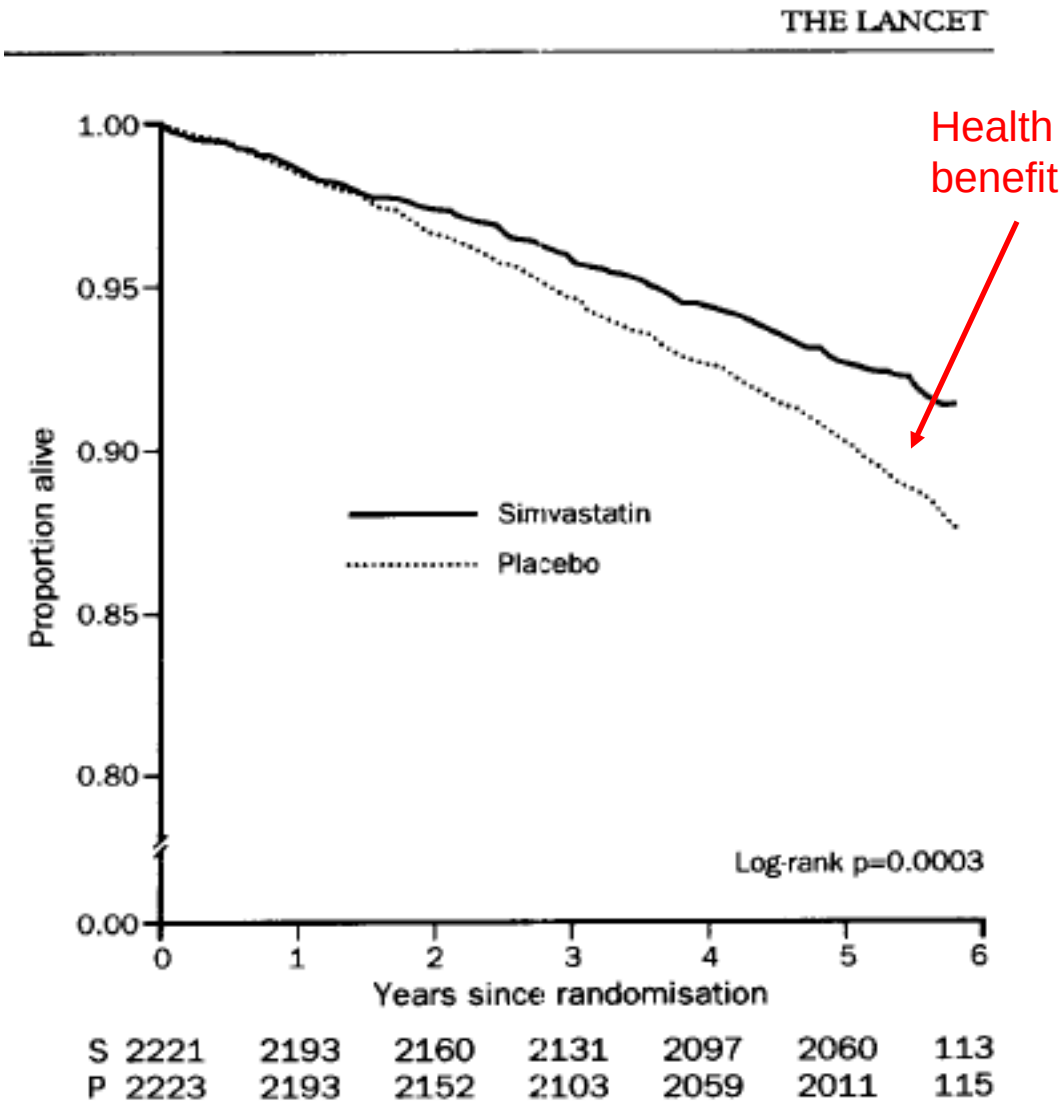


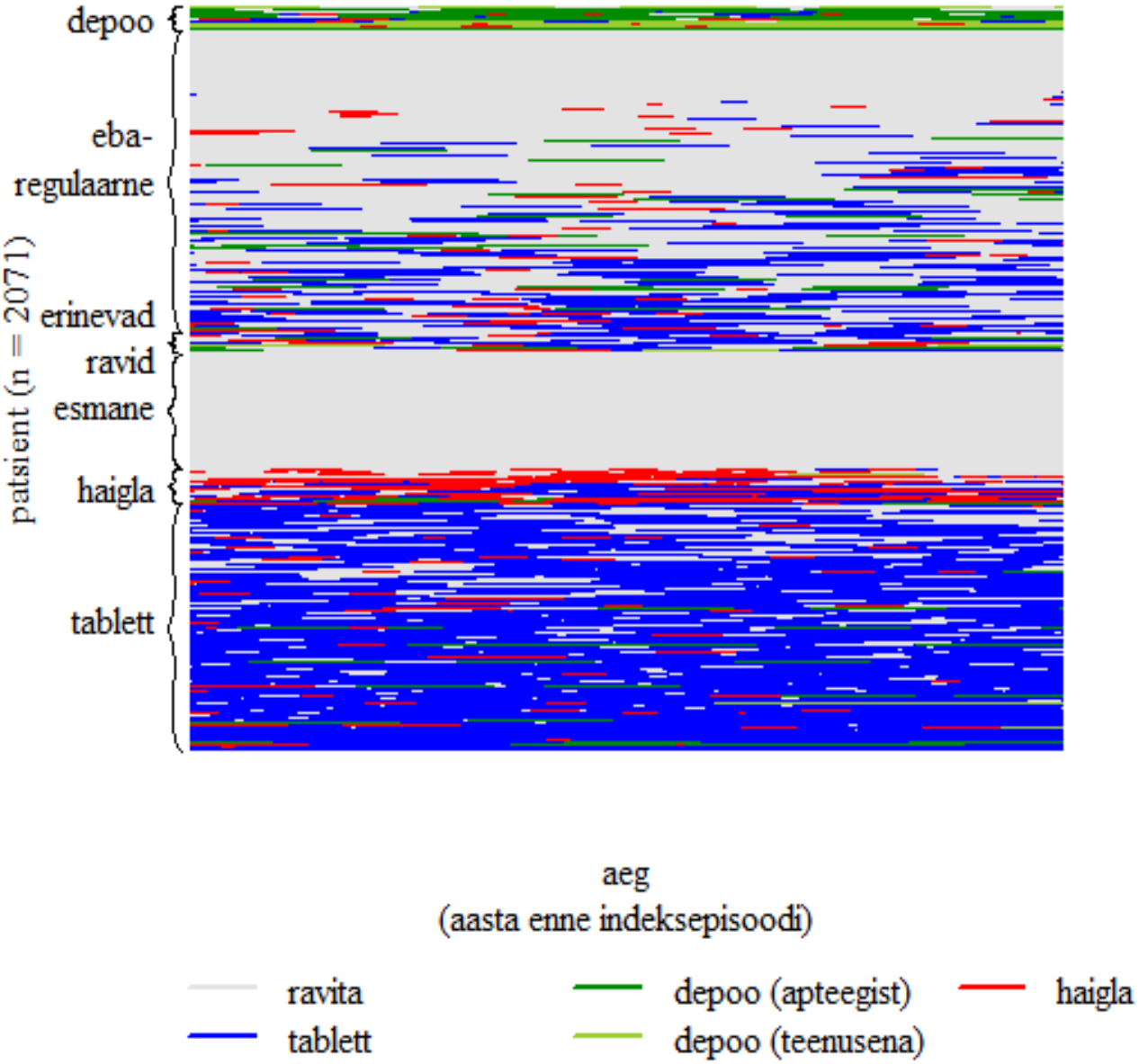
Figure 1: **Kaplan-Meier curves for all-cause mortality**
Number of patients at risk at the beginning of each year is shown below the horizontal axis.

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, witout 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 bilogical 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 enourage 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

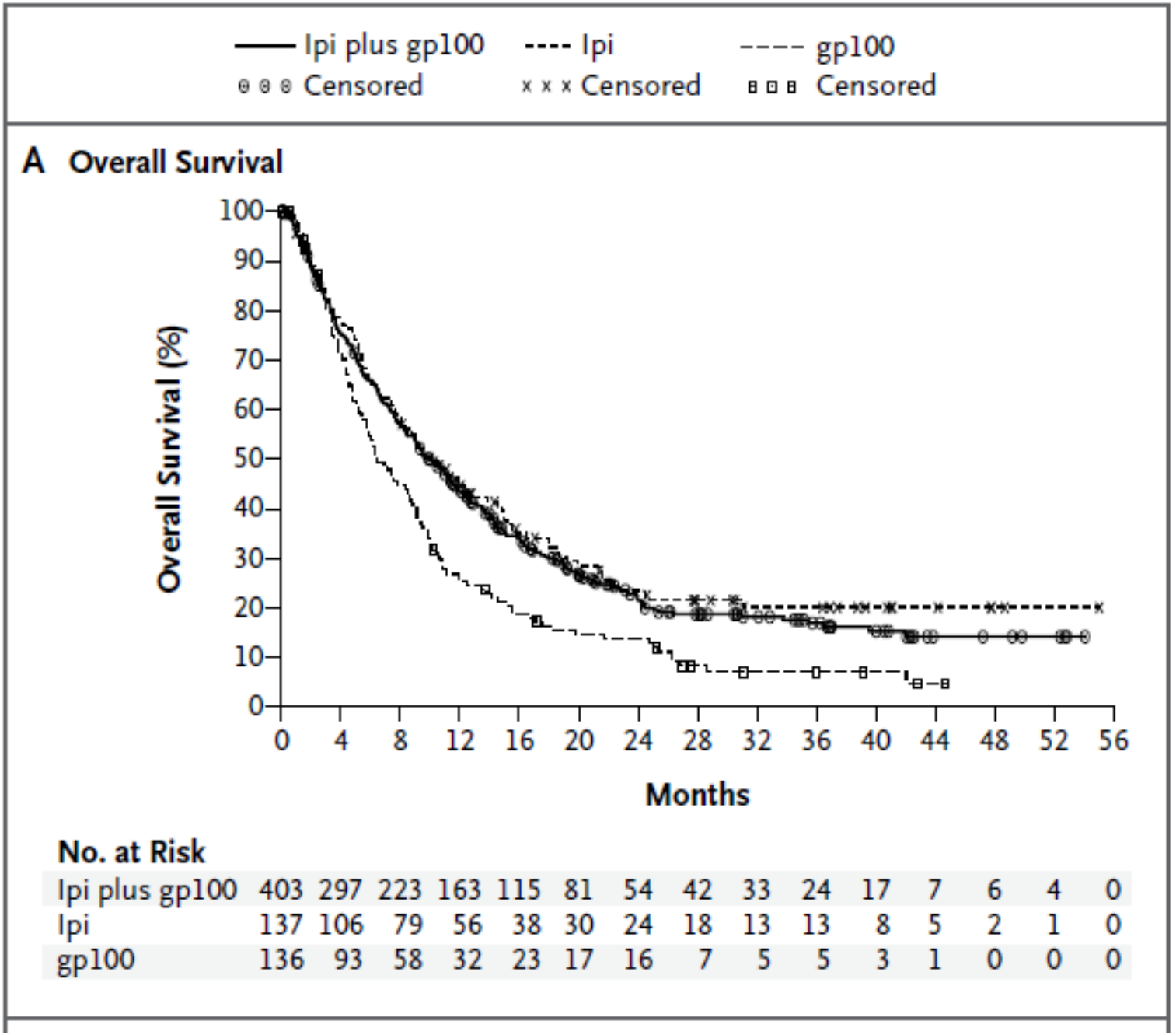
The NEW ENGLAND JOURNAL of MEDICINE

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.


Ipi plus gp100
Censored
Ipi
Censored
gp100
Censored
A Overall Survival
Overall Survival (%)
100
90
80
70
60
50
40
30
20
10
0
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56
Months
No. at Risk
Ipi plus gp100 403 297 223 163 115 81 54 42 33 24 17 7 6 4 0
Ipi 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 **(38%)**	189.- **(3 times)**
Agen (Leciva)	139.-	3110	58.-
Amloca (Hexal)	139.-	3011	58.-
Ratiopharm	150.-	1953	70.-

Olanzapine – brand vs 3 generics 2008

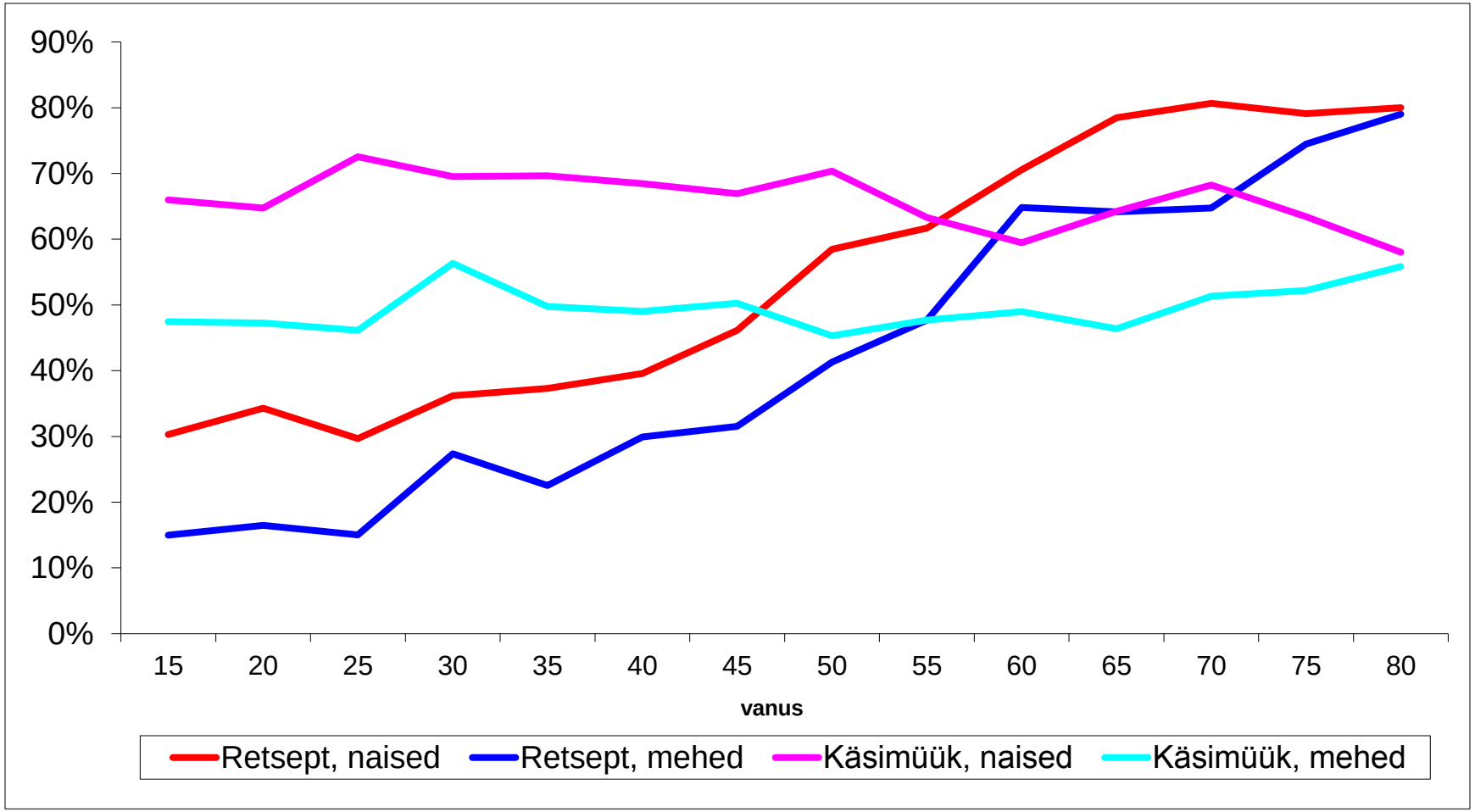
(10mg 30 tabs, reference price 668.-)

	Retail price	No of patients 556	Co-payment
Zyprexa (Eli Lilly)	1770.-	85 **(13%)**	1167.- **(58 times)**
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 uneffective treatments and disinvest uneffective 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

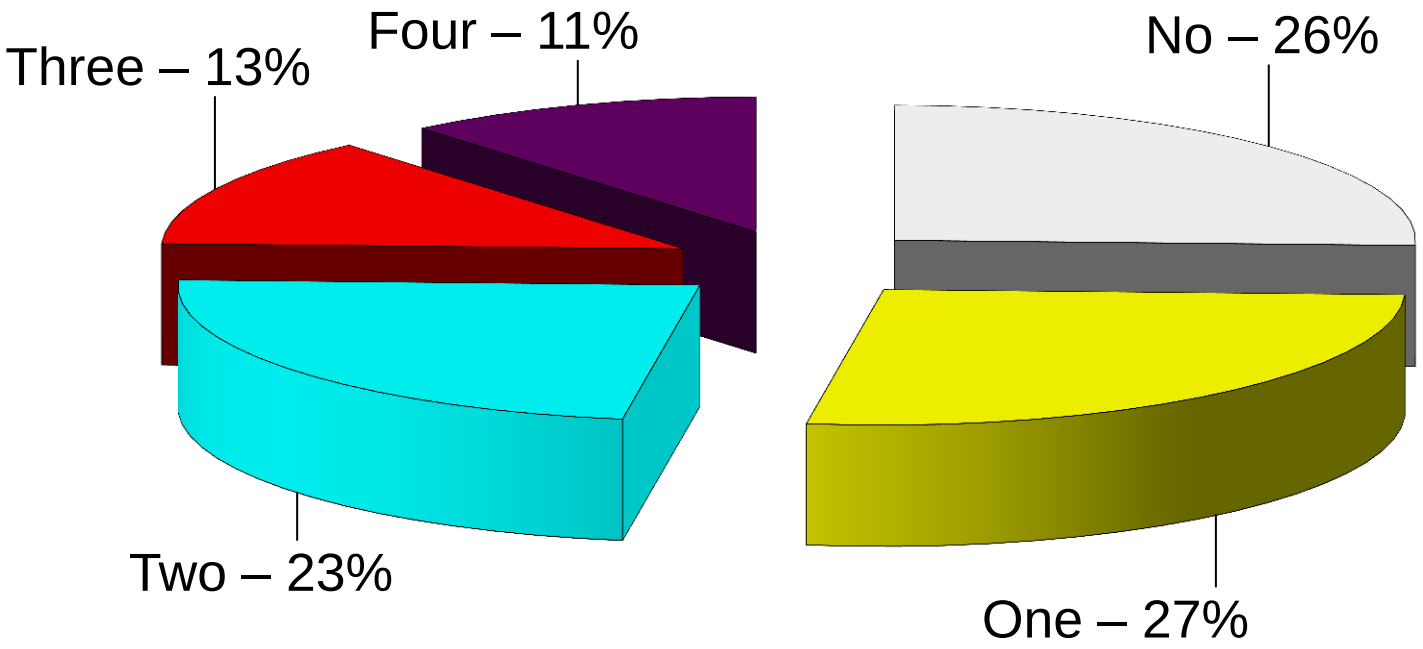


Table 3.7.2 Sales of reimbursed medicines by gender and age, DDD/1 000 inhabitants/day, 2011

	Denmark		Faroe Islands		Finland		Iceland		Norway		Sweden	
Age	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