

Helsinki, Norwegian doctors 16. October 2014

A systematic approach to asthma management. Finnish Asthma Programme 1994-2004



Professor Tari Haahtela
Skin and Allergy Hospital
Helsinki University Hospital

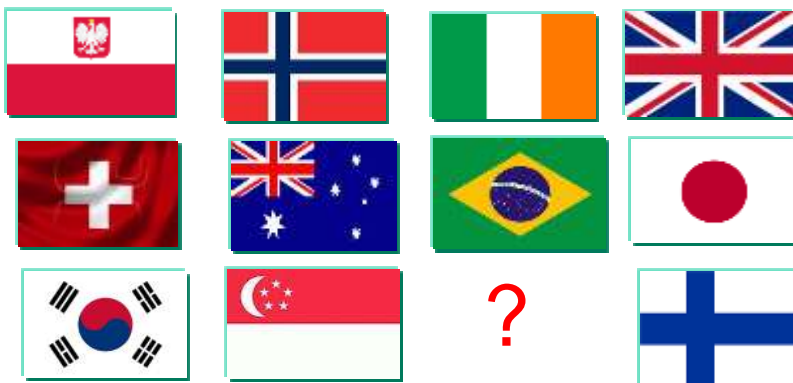
Allergy 2009

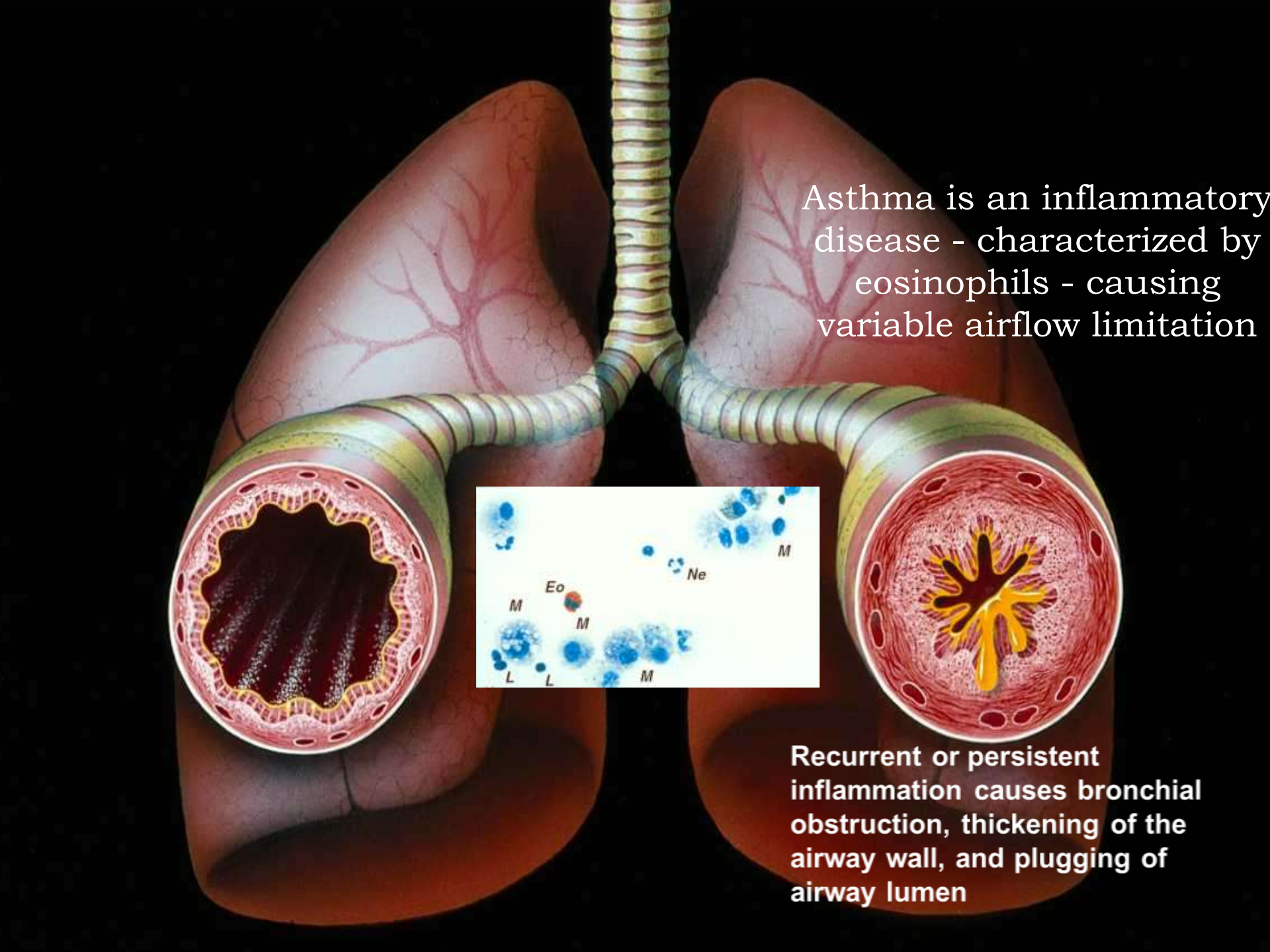
REVIEW ARTICLE

Reduction of asthma burden is possible through National Asthma Plans

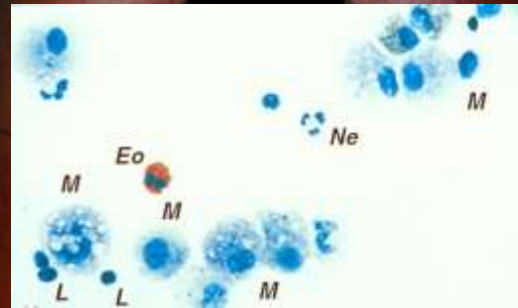
M. Kupczyk^{1,2}, T. Haahtela³, A. A. Cruz⁴ & P. Kuna²

¹The Retzius Laboratory for Translational Lung Research, Karolinska Institutet, Stockholm, Sweden; ²Department of Internal Medicine, Asthma and Allergy, Barlicki University Hospital, Medical University of Lodz, Lodz, Poland; ³Skin and Allergy Hospital, Helsinki University, Helsinki, Finland; ⁴ProAR – Faculdade de Medicina da Bahia, Universidade Federal da Bahia (UFBA), Salvador, Bahia, Brazil

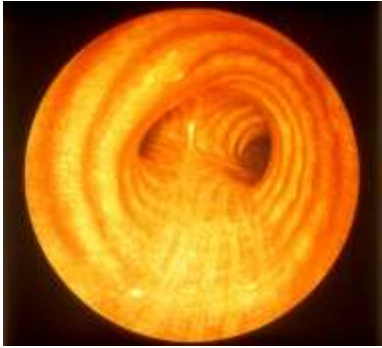




Asthma is an inflammatory disease - characterized by eosinophils - causing variable airflow limitation



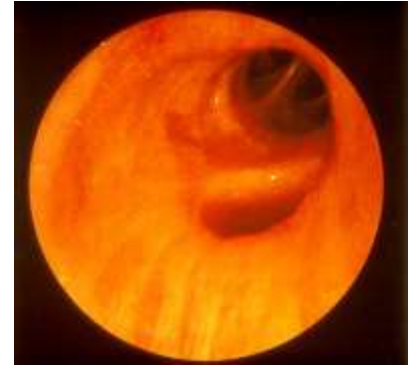
Recurrent or persistent inflammation causes bronchial obstruction, thickening of the airway wall, and plugging of airway lumen



Damage of the Airway Epithelium and Bronchial Reactivity in Patients with Asthma¹⁻³

AM REV RESPIR DIS 1985; 131:599-606

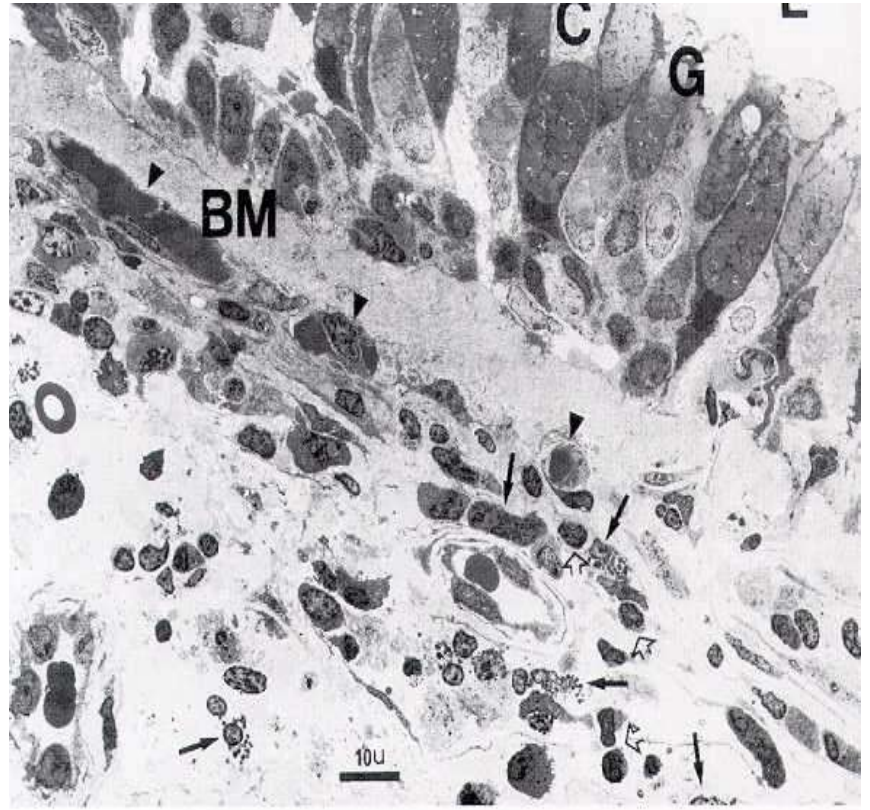
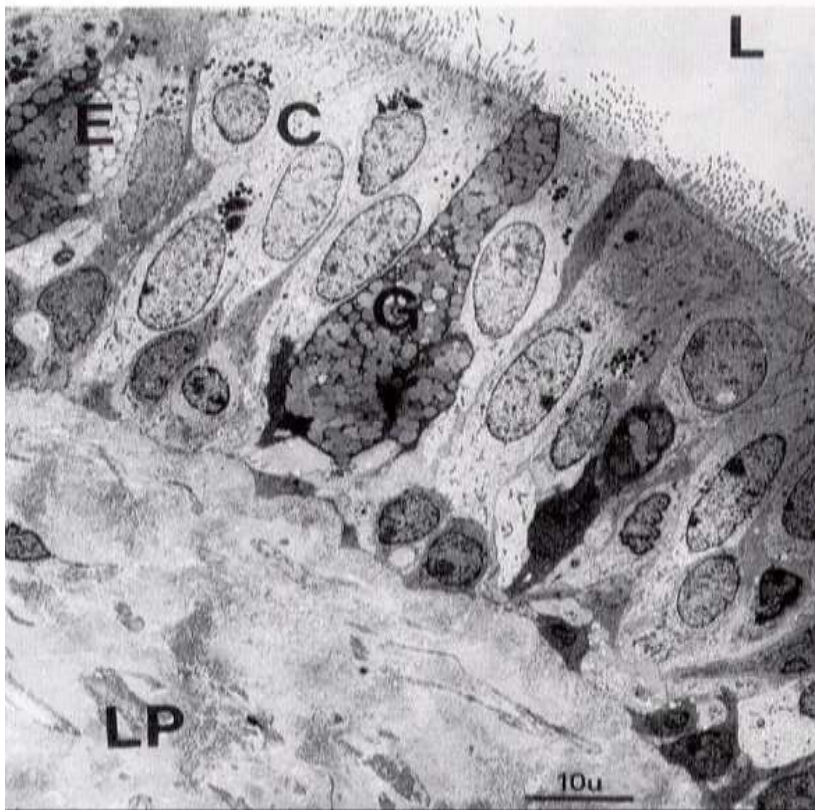
L. A. LAITINEN, M. HEINO, A. LAITINEN, T. KAVA, and T. HAAHTELA



Healthy bronchial mucosa

1985

Asthmatic bronchial mucosa



PEF-follow-up

haitava epästea.

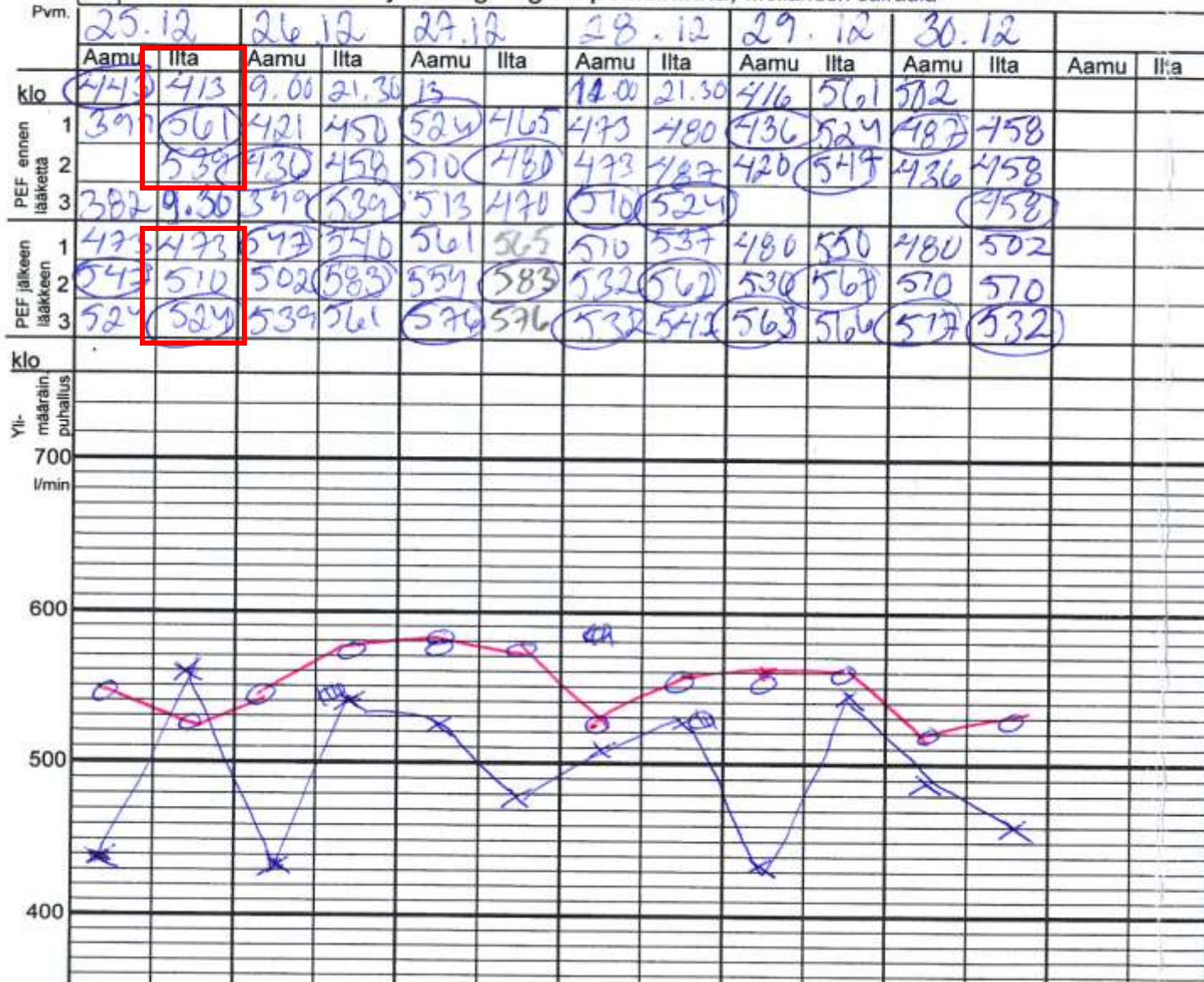
HUS, HYKS

Vuosi 2008

Iho- ja allergiasairaala

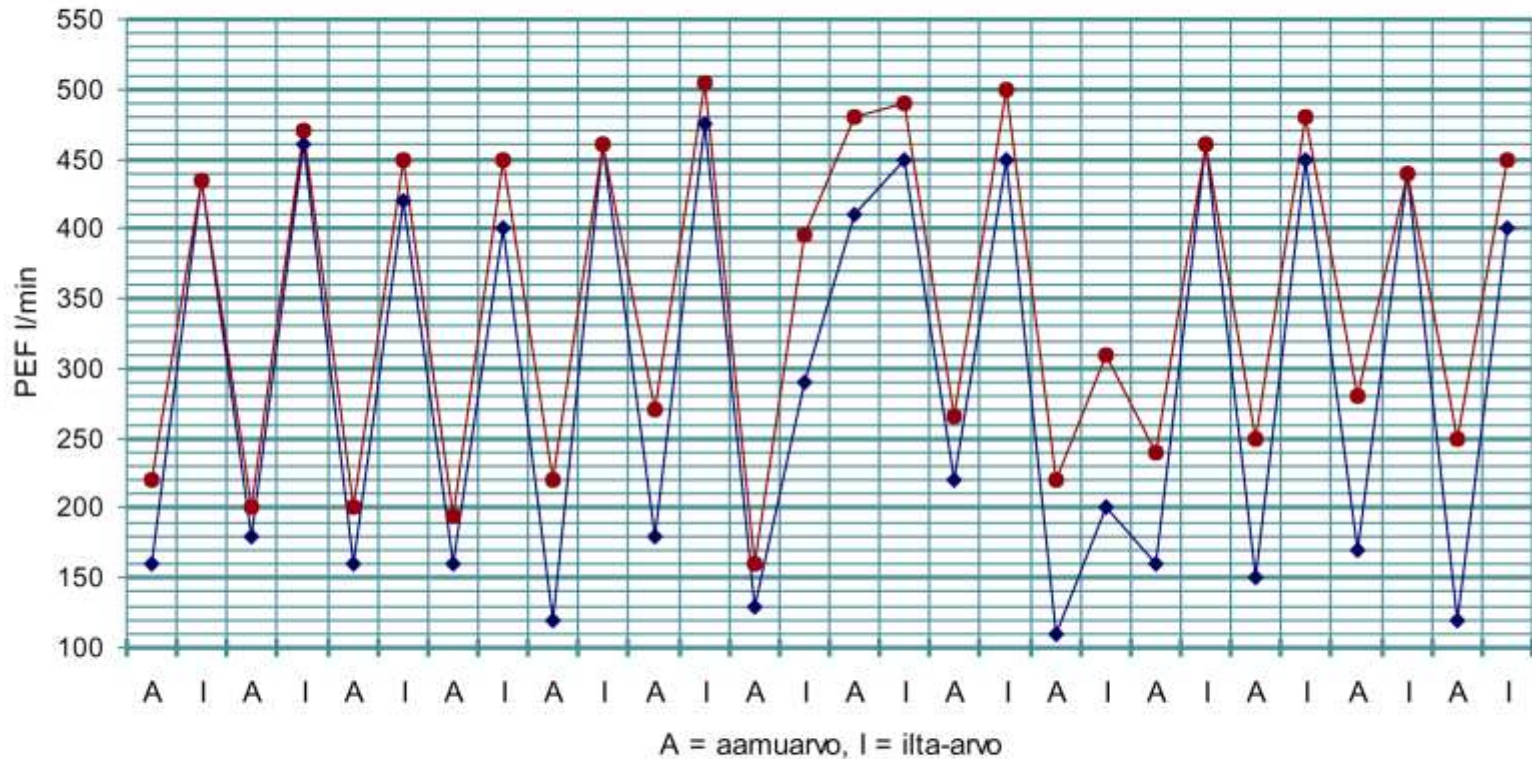
PEF-seuran

Keuhkosairauksien ja allergologian poliklinikka, Meilahden sairaala



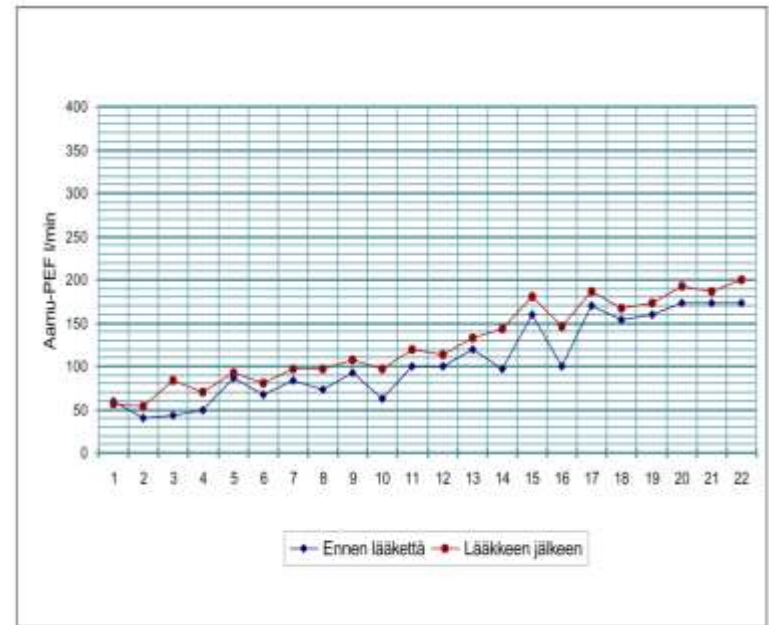
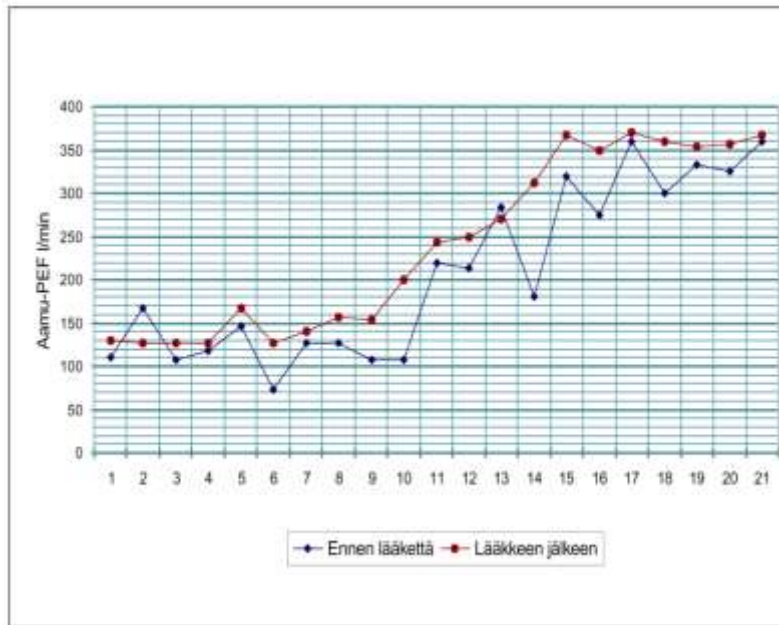
Patient – 46 year old man

PEF-seurantataulukko



◆ Ennen lääkettä ● Lääkkeen jälkeen

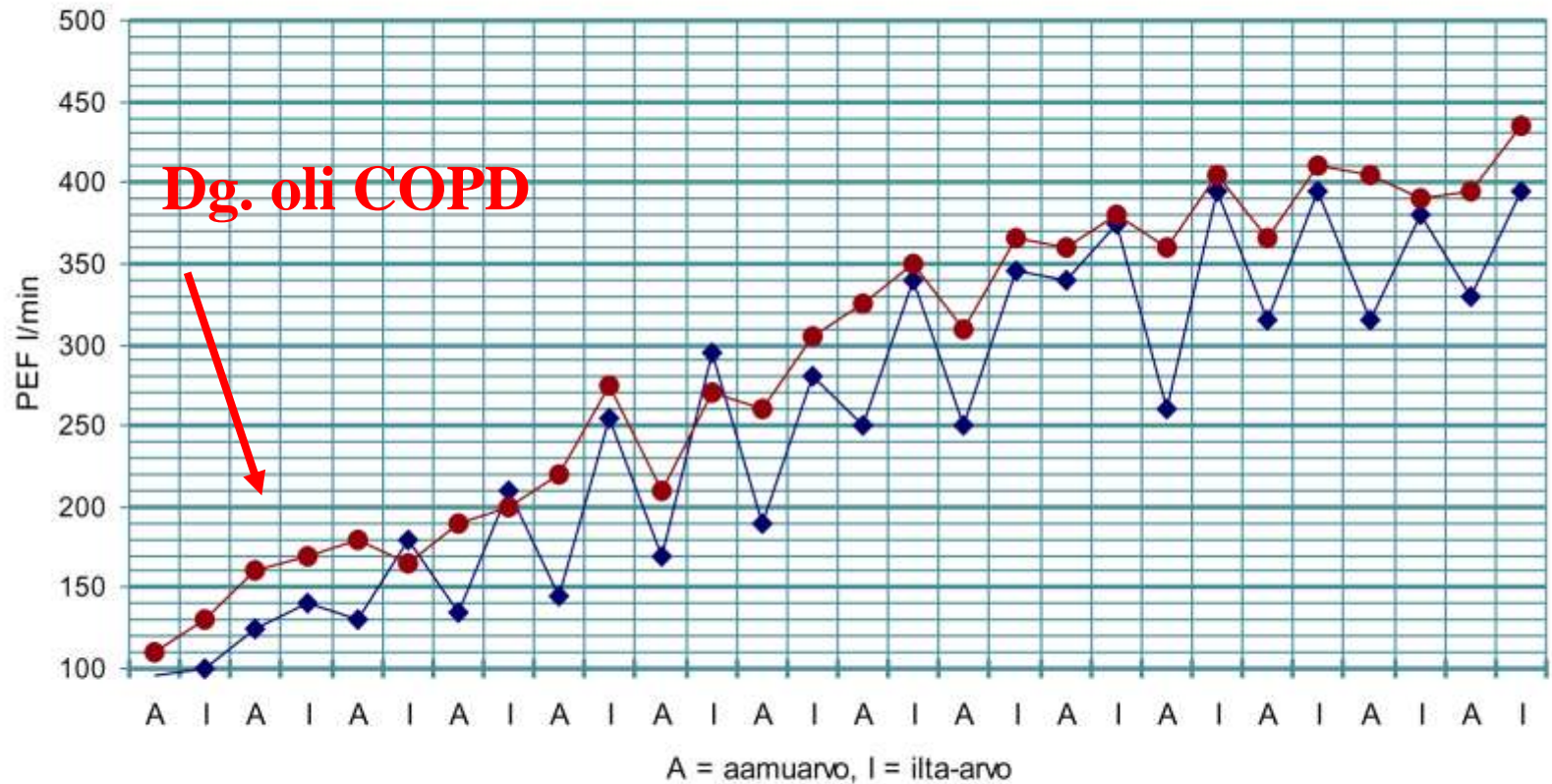
Patient – 29 year old young man, follow-up of 12 years



12 vuotta homeopatiaa!

Patient – 58 year old lady

PEF-seurantataulukko



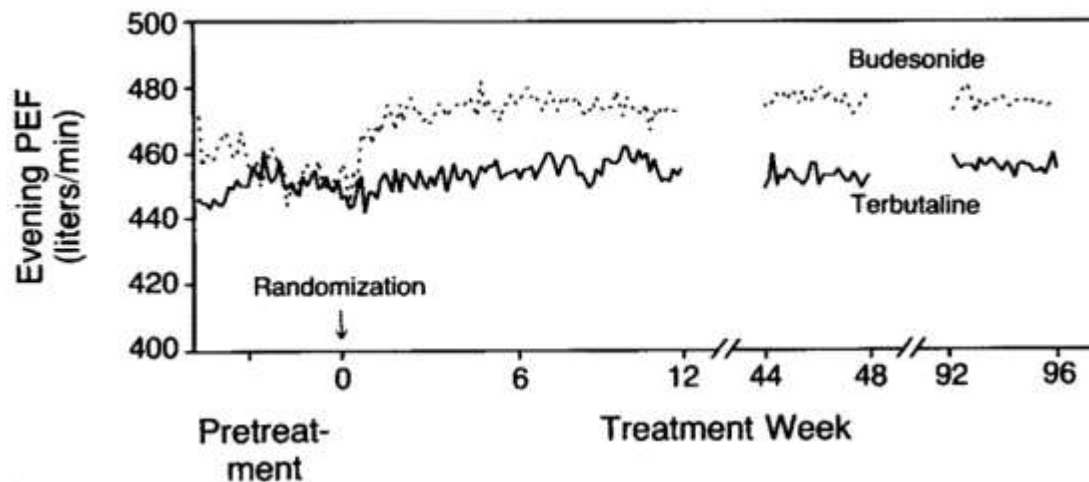
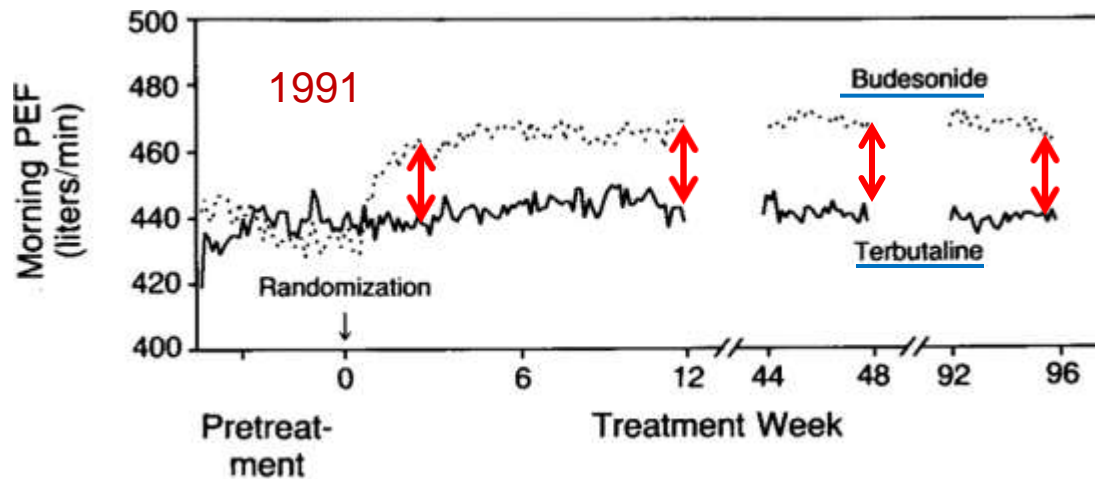
◆ Ennen lääkettä ● Lääkkeen jälkeen

**Asthma is an
inflammatory
disorder from the
very beginning -
and should be treated
as such!**



COMPARISON OF A β_2 -AGONIST, TERBUTALINE, WITH AN INHALED CORTICOSTEROID, BUDESONIDE, IN NEWLY DETECTED ASTHMA

TARI HAAHTELA, M.D., MARKKU JÄRVINEN, M.D., TUOMO KAVA, M.D., KIRSTI KIVIRANTA, M.D.,
SIRKKA KOSKINEN, M.D., KAARINA LEHTONEN, M.D., KURT NIKANDER, B.A., TORE PERSSON, PH.D.,
KAJJA REINIKAINEN, M.D., OLOF SELROOS, M.D., ANSSI SOVIJÄRVI, M.D., BRITA STENIUS-AARNIALA, M.D.,
THORE SVAHN, M.Sc., RITVA TAMMIVAARA, M.D., AND LAURI A. LAITINEN, M.D.





Finnish Asthma Programme 1994-2004 – major change for the better

Focus: (1) inflammation, (2) early detection and intervention, (3) guided self-management, and (4) networking

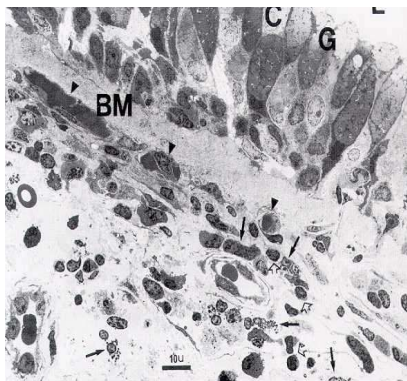
Ministry of Health; National Public Health Institute;
NGOs: Allergy & Asthma Federation, Finnish Lung Health Association
FILHA, Finnish Pulmonary Association HELI

Real-life action in Finland!

Finnish Asthma Programme 1994-2004; Allergy Programme 2008-2018

- 1. Hit early and hit hard with anti-inflammatory treatment**
win the patient's confidence and improve outcome
- 2. Stop attacks proactively with guided self-management**
- 3. Follow the patient, treat according to severity**

inflammation



recovery

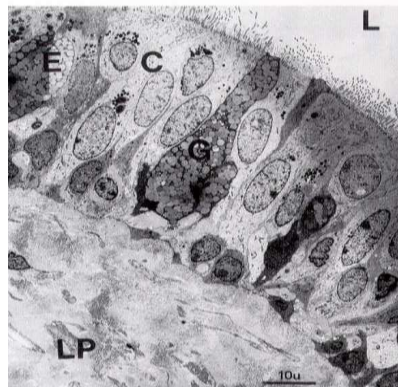
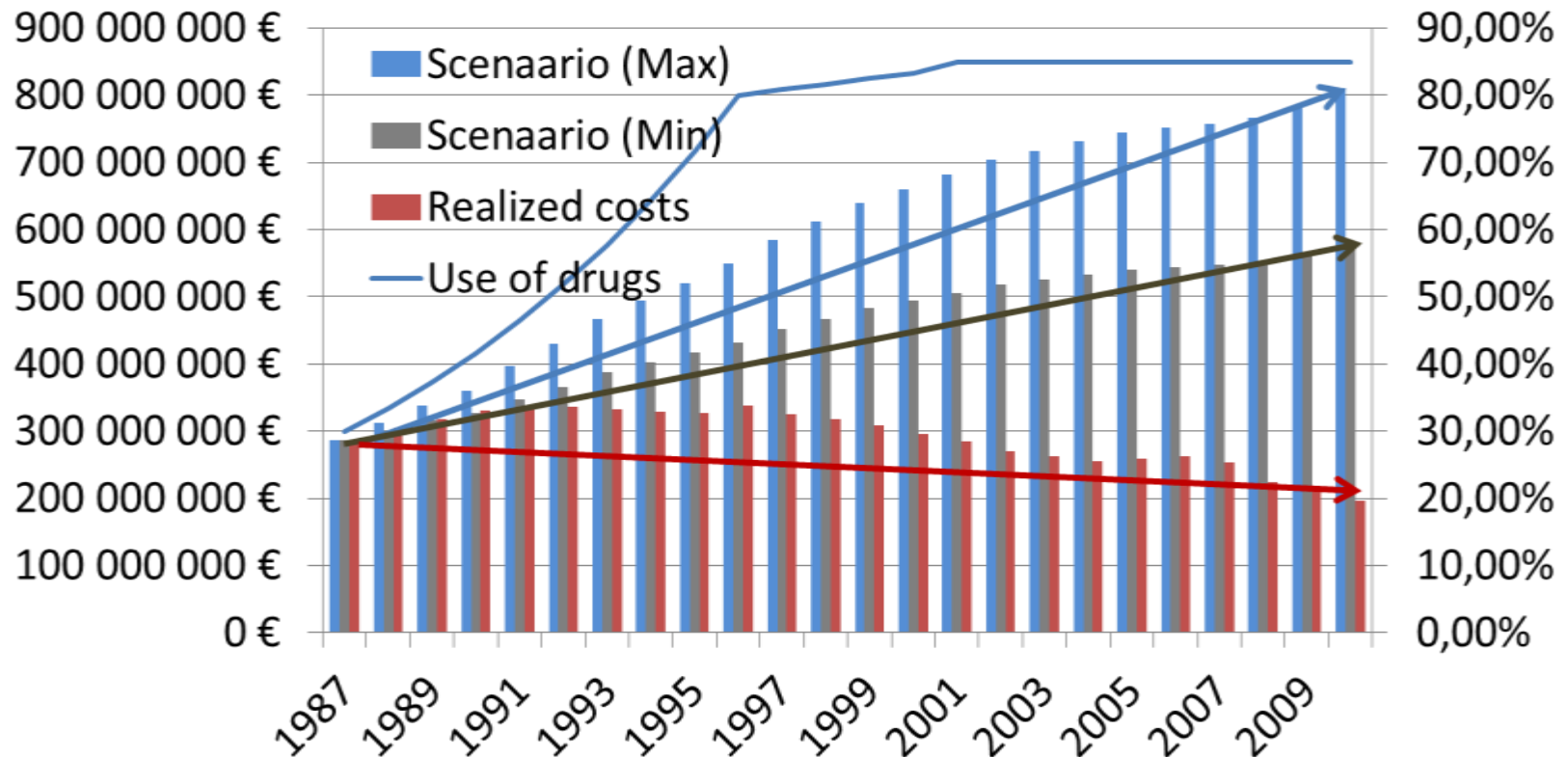
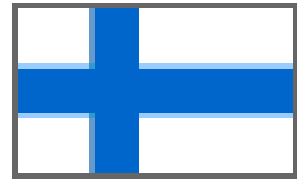




Figure 3. Total asthma costs in Finland 1987-2010. True costs **in red**. The max annual theoretical costs **in blue** and min costs **in grey**.



- Reissell E, et al. Asthma costs in Finland. A public health model to indicate cost effectiveness during 20 years. Finnish Medical Journal 2010.
- Haahtela T, et al. Reduction of asthma costs in Finland 1987-2010. A prevalence based cost of illness study Manuscript 2013.



Finnish Asthma Programme 1994-2004

TRADITIONAL

- Money
- Personnel
- Facilities
- Time

NEW

- Innovation and **new knowledge**
- Attitude and motivation
- Unused know-how
- Resources not organised for common goals
- Interest group participation



Goals for Prevention, Treatment and Rehabilitation

- ▶ Patients with early asthma recover
- ▶ Patients feel well (QoL), and lung function and capacity for work correspond to age.
- ▶ Percentage of patients with severe and moderate asthma falls from **40% to 20%** (asthma barometer)
- ▶ Number of bed-days of asthma decreases by **50%**, to 50 000 a year
- ▶ Annual costs per patient fall by **50%** with more effective preventive treatment

Measures towards the Goals

- ▶ **Early** diagnosis and **proactive** treatment. "Hit early and hit hard"
- ▶ **Guided self-management** primary form of treatment
- ▶ **GPs** make the diagnosis and start treatment. Out-patient education implemented effectively

- ▶ Smoking and tobacco smoke decreased
- ▶ Knowledge of asthma increased in key groups
- ▶ Scientific research promoted

Regional education

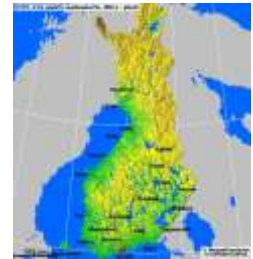


Table 1 Stepwise educational sessions and target groups during the 10 year programme organized by Finnish Lung Health Association (Filha) and other professional bodies

Step	No of sessions	No of participants
(1) Pulmonary and paediatric hospital units	100	5300
(2) Primary and secondary care professionals	237	3700
(3) All healthcare professionals	450	25500
(4) Regional paediatricians and primary care professionals (mini-programme)	25	1300

- ▶ Coordinated by FILHA (NGO=Non-Governmental Organisation)
- ▶ Intervention managed by integrating tasks into everyday practice of healthcare staff
- ▶ Most of activities were part of clinicians' and administrators' routine work
- ▶ Direct costs € 650 000 including € 125 000 from Ministry, who importantly gave the political commitment

Participants = 36 000!

Networking is the key to success!

- ▶ Asthma Responsible General Practitioners, N = 200
- ▶ Asthma Nurses, N = 580
- ▶ Asthma Pharmacists, N = 695 (94 % of Pharmacies included)

The Programme was enlarged twice

- ▶ Pharmacy Programme 1997
- ▶ Childhood asthma mini-Programme 2002

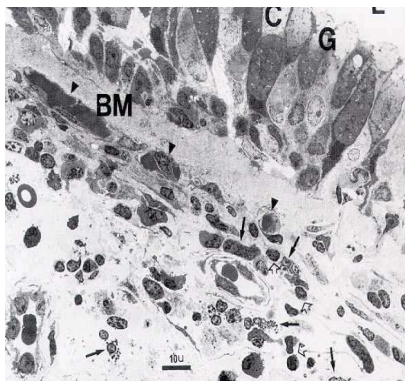


Real-life action in Finland!

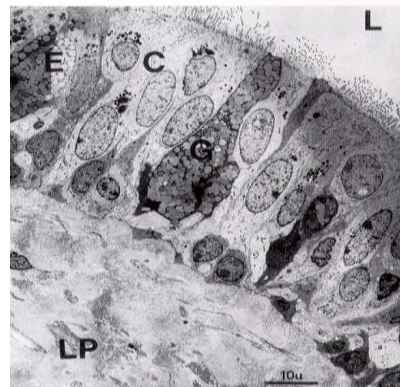
Finnish Asthma Programme 1994-2004; Allergy Programme 2008-2018

1. Hit early and hit hard with anti-inflammatory treatment
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inflammation



recovery



52-year old lady, asthma for 20 years, exacerbations with resp.infections

HUS, HYKS

Vuosi 2009

Potilaan nimi ja henkilötunnus

Iho- ja allergiasairaala
Keuhkosairauksien ja allergologian poliklinikka, Meilahden sairaala

PEF-seurantataulukko



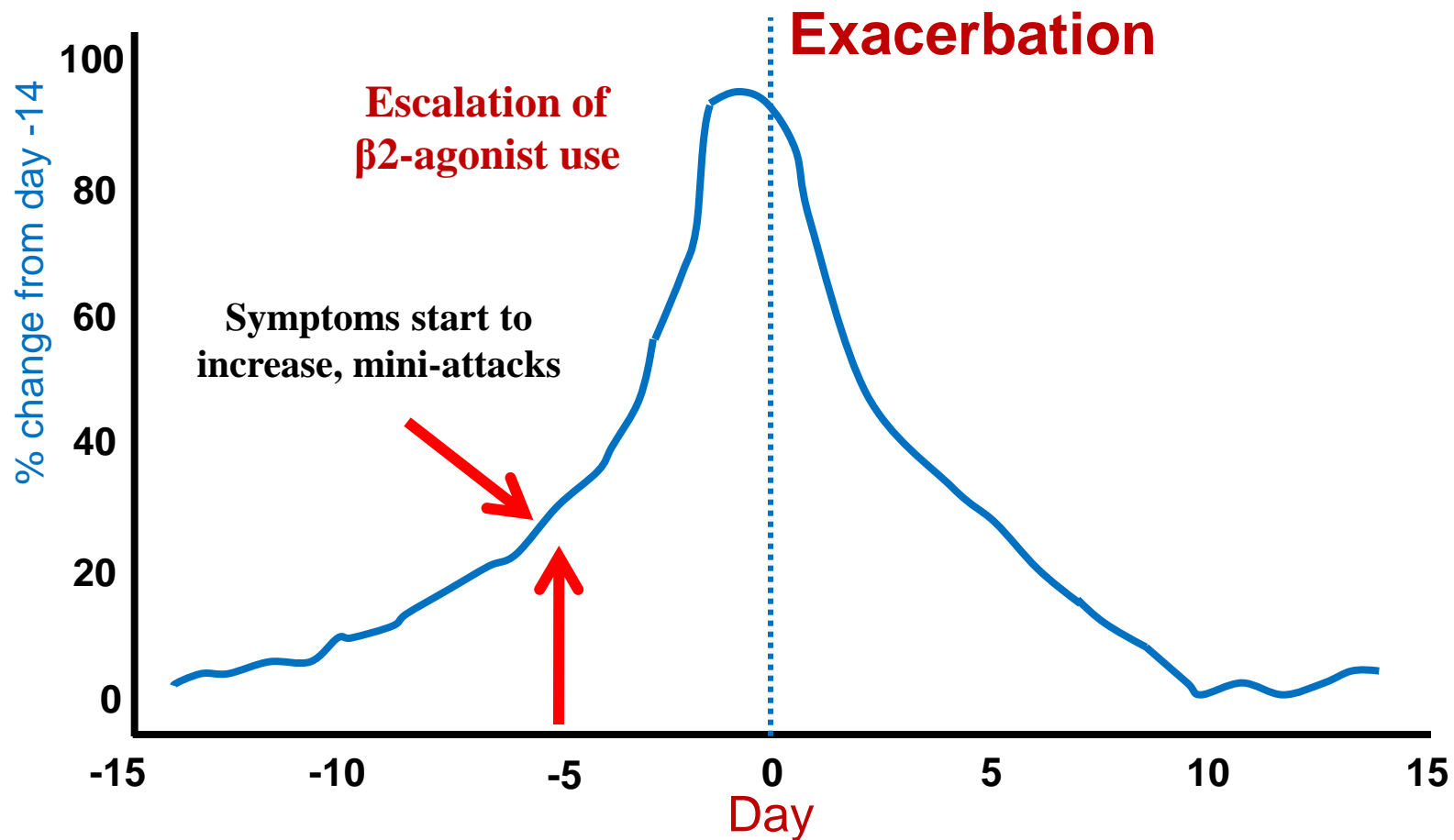
Resp. infection starts!

Pretnisolea 20 mg

Kotona/Ei töitä / Toissa Toissa sairaalalla

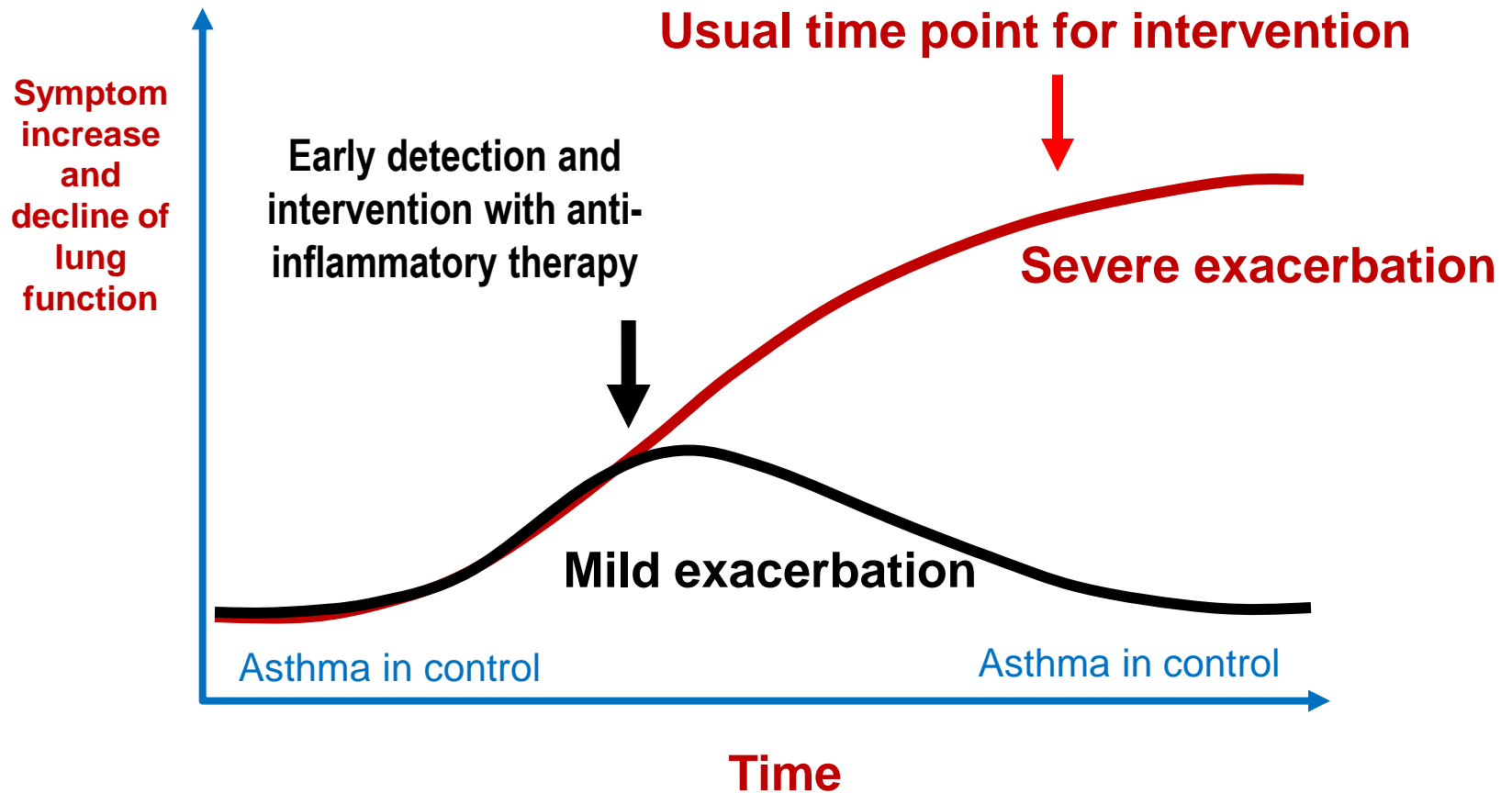
X = ennen lääkettä O = lääkkeen jälkeen puhallukset lääkkeen jälkeen on siis normaaleiden annuslääkkeiden jälkeen (Ei siis erikseen puhallusten takia otettu aavaavaa) HUS 10-2954

Profile of the exacerbations in FACET-study



Hit early and hit hard!

Early intervention with anti-inflammatory treatment to stop exacerbations



Adult asthma Control

Card/Stamp + Net/Mobile-version

1. Doctor – Nurse, Pharmacist

Check the
asthma control!

Ask patient – is he/she doing OK?

1. Reliever max 2 dose/wk
2. Symptoms max 2 day/wk
3. Symptoms max 1 night/wk
4. No activity restrictions
5. PEF-var. max 50 l/min/wk

Ask yourself - is the treatment OK?

1. Reliever need minimal
 2. Controller dose adequate
 3. Adherent to treatment
 4. Correct inhalation
 5. Exacerbation plan exists
- ▶ Good morning PEF level _____

Doctor/Nurse uses the check-list to assure asthma control, and guide the patient to self-management.
Zero tolerance to asthma attacks

Adult asthma Control

Card/Stamp + Net/Mobile-version

Educate the patient to note the risks and increase medication!



2. Patient - guided self-management

Notice symptom increase

YES

- | | | |
|----|------------------------|--------------------------|
| 1. | Needing more reliever? | <input type="checkbox"/> |
| 2. | Feeling cold, flu? | <input type="checkbox"/> |
| 3. | Coughing ▲ Wheezing ▲ | <input type="checkbox"/> |
| 4. | Exercise tolerance ▼ | <input type="checkbox"/> |
| 5. | Morning-PEF ▼ | <input type="checkbox"/> |

► PEF-decreases from _____ to _____

Stop attack/exacerbation

- | | | |
|----|--|--------------------------|
| 1. | Increase controller 2-4 fold (2-4 wk),
or start a course of controller (4 wk) | <input type="checkbox"/> |
| 2. | Start to use reliever regularly (2-4 wk) | <input type="checkbox"/> |
| 3. | If on Combi, double the dose (2 wk) | <input type="checkbox"/> |
| 4. | Prednisolon tabl. 20mg/day (1-2 wk) | <input type="checkbox"/> |
| 5. | Go to emergency, if no help | <input type="checkbox"/> |
| 6. | Later, check controller treatment | |

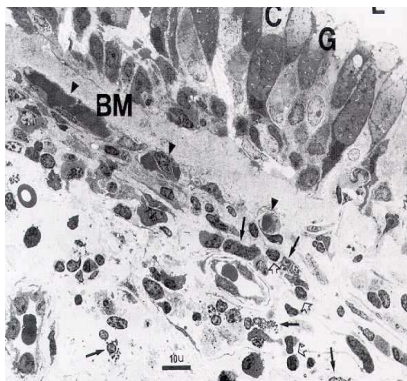
Doctor/Nurse uses the check-list to assure asthma control, and guide the patient to self-management.
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Real-life action in Finland!

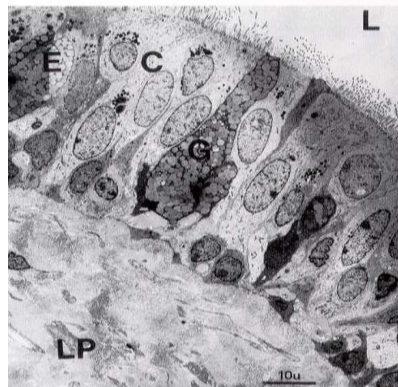
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inflammation



recovery



Asthma diagnosis is often severely delayed

both in children and adults = untreated or poorly treated period

- consecutive patients during 10 days
- delay from the start of the symptoms to the diagnosis
- doctor's estimate based on patient files and personal interview

Children from 1 to 15 years

average delay of diagnosis:

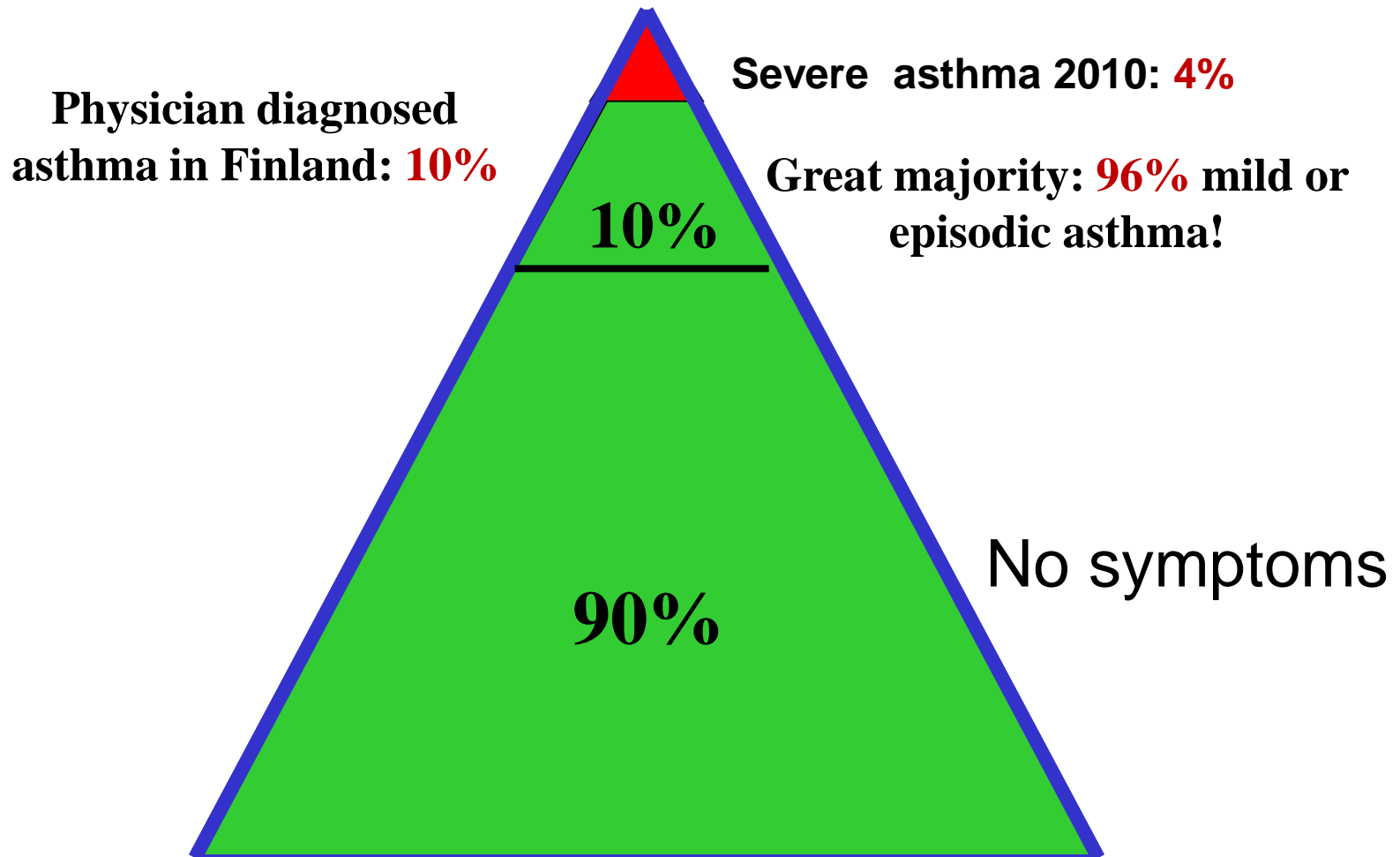
1 year 7 months!

Adults from 16 to 70 years

average delay of diagnosis:

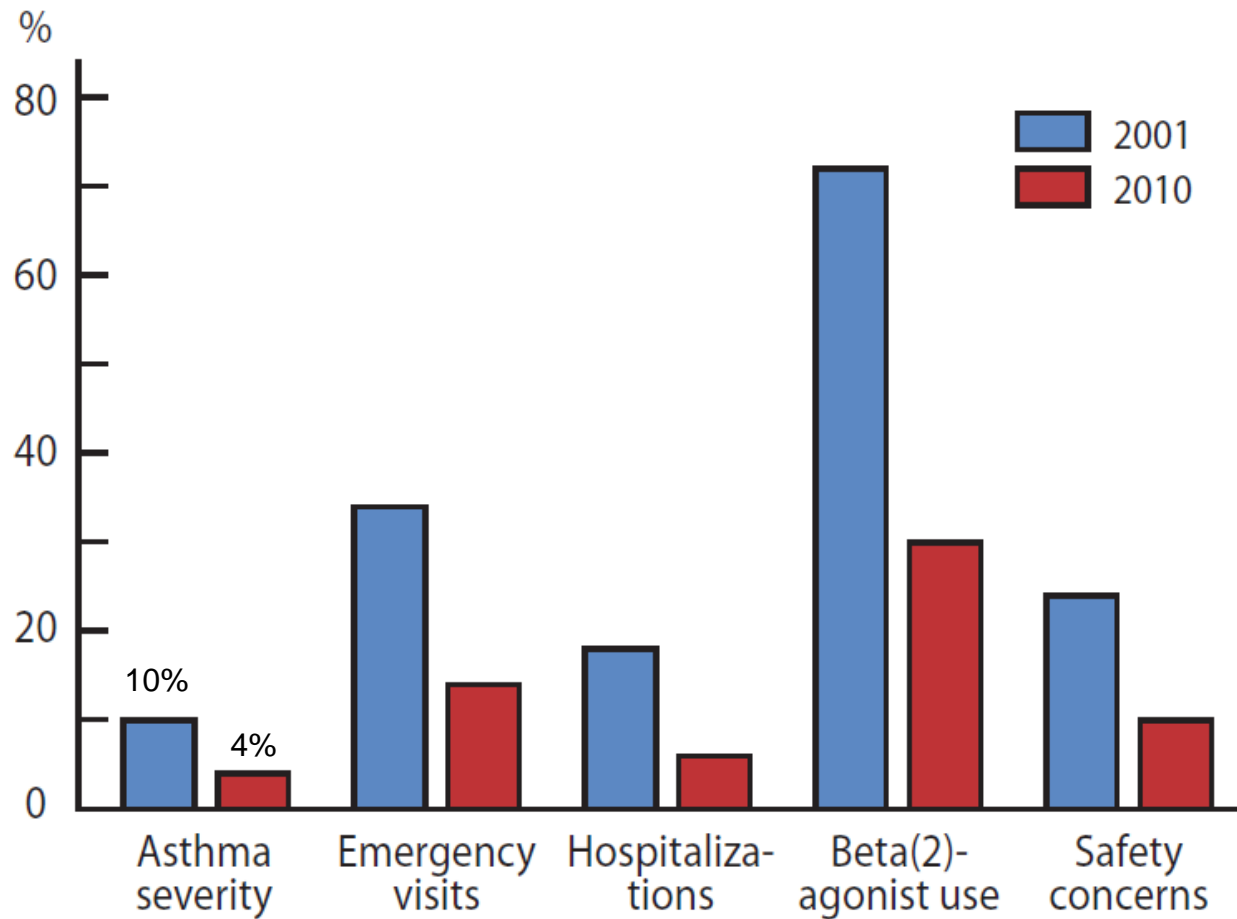
5 years 4 months!

Asthma Pyramid in Finland



Asthma Barometer Study in Pharmacies 2001 vs. 2010

Asthma has become a milder disease in 10 years!



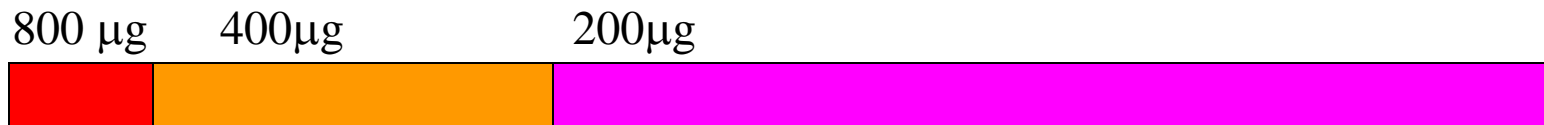
Heica-study

Helsinki Early Intervention Childhood Asthma

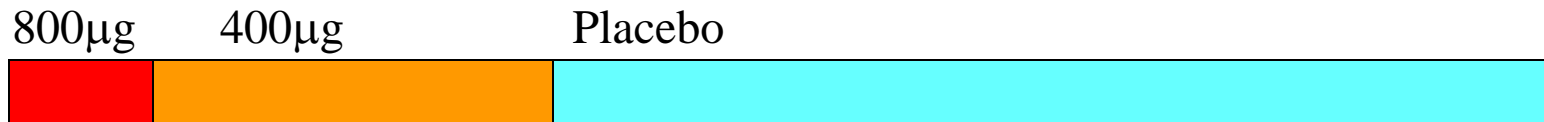
Daily vs. periodic (as-needed) ICS for mild persistent asthma (mean age 7 years)

Three different anti-inflammatory strategies

1. Budesonide induction + regular daily treatment



2. Budesonide induction + periodic treatment (as-needed 2 week courses)



3. Cromoglycate 10 mg x 3 (control)



0

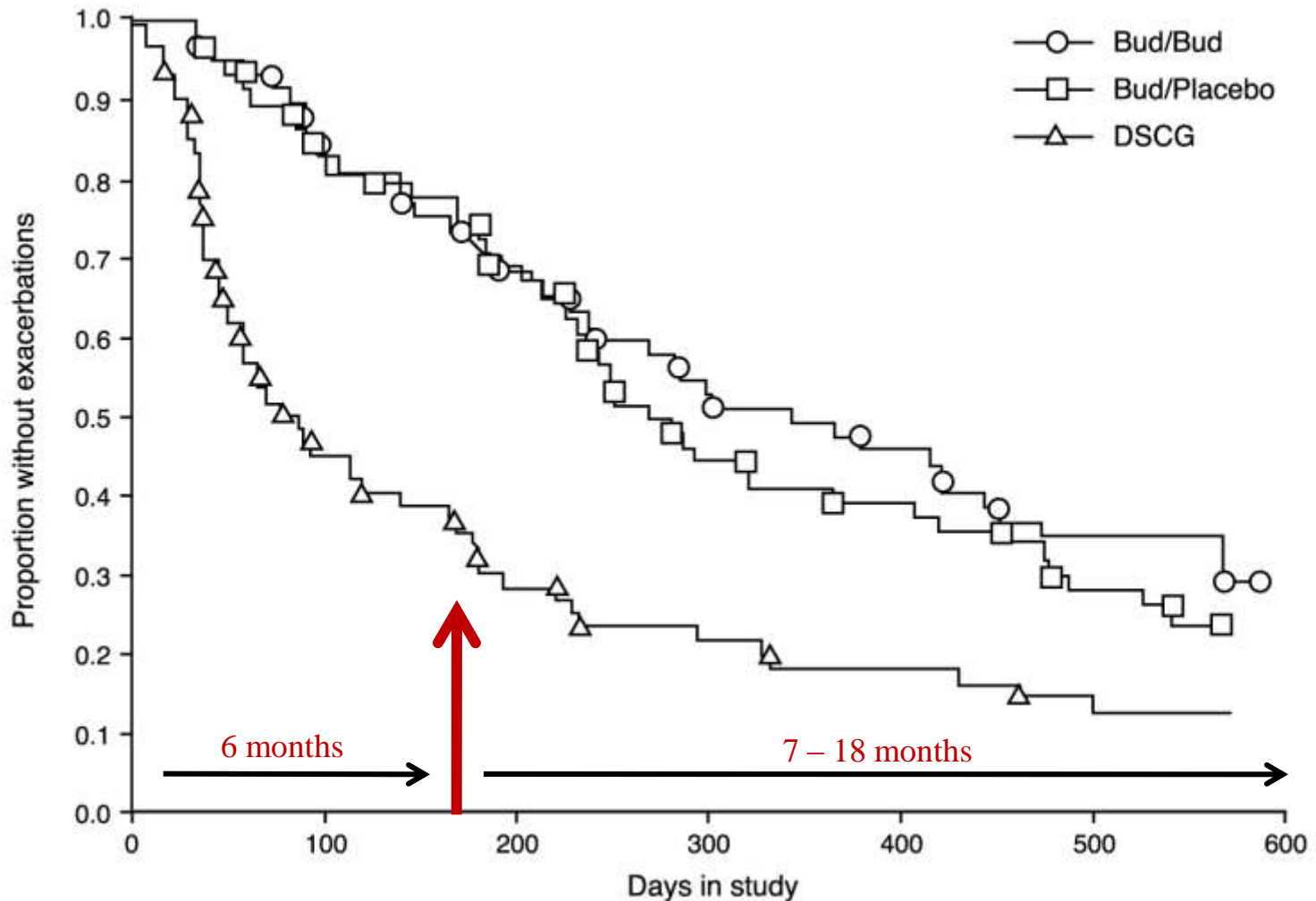
MONTHS

6

18

HEICA – Study = Helsinki Early Intervention Childhood Asthma

Time for first exacerbation (x-axis) and proportion without exacerbations (y-axis) in schoolchildren (5-10 yr) on continuous budesonide (**Bud/Bud**), periodic budesonide (**Bud/Placebo**) and continuous **DSCG** (control)



Turpeinen M, Pelkonen A, et al. Continuous vs. intermittent inhaled corticosteroid for mild persistent asthma in children – not too much, not too little. *Thorax* 2012.

Most children have periodic coughing and wheezing

- Most children get along using 2-4 week ICS courses as-needed, if started early and used proactively
- Regular daily treatment with ICS or fixed combi of ICS/LABA is seldom needed
- If short ICS courses are often needed (4-6/year), start daily ICS maintenance



In Europe, 32 million have asthma, annually 12 000 deaths
(230 000 globally), maybe 2-4 million hospital days

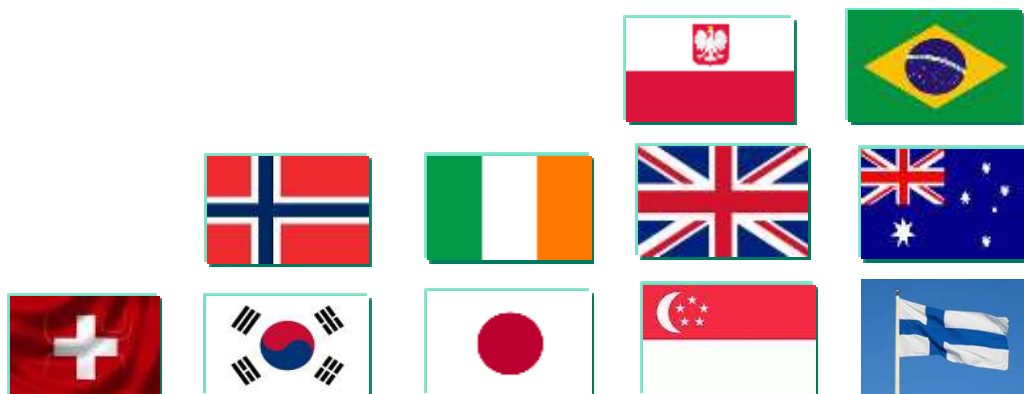
Fight against asthma is successful!

ASTHMA

A 10 year asthma programme in Finland: major change for the better

T Haahtela, L E Tuomisto, A Pietinalho, T Klaukka, M Erhola, M Kaila, M M Nieminen, E Kontula, L A Laitinen

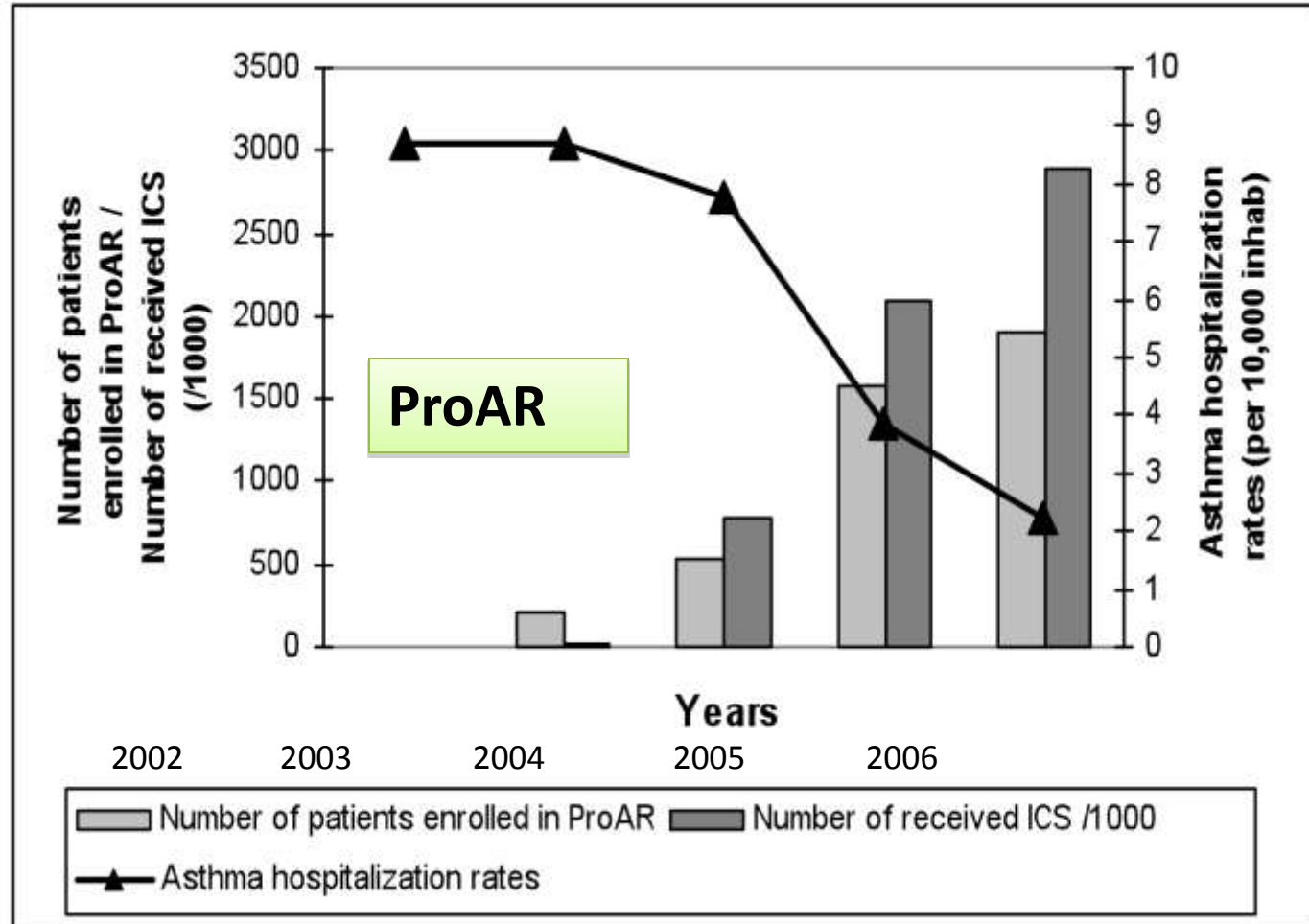
Thorax 2006;61:663-670. doi: 10.1136/thx.2005.055699



Rapid reduction in asthma hospitalizations in Salvador da Bahia, Brazil (2.7 million inhabitants)

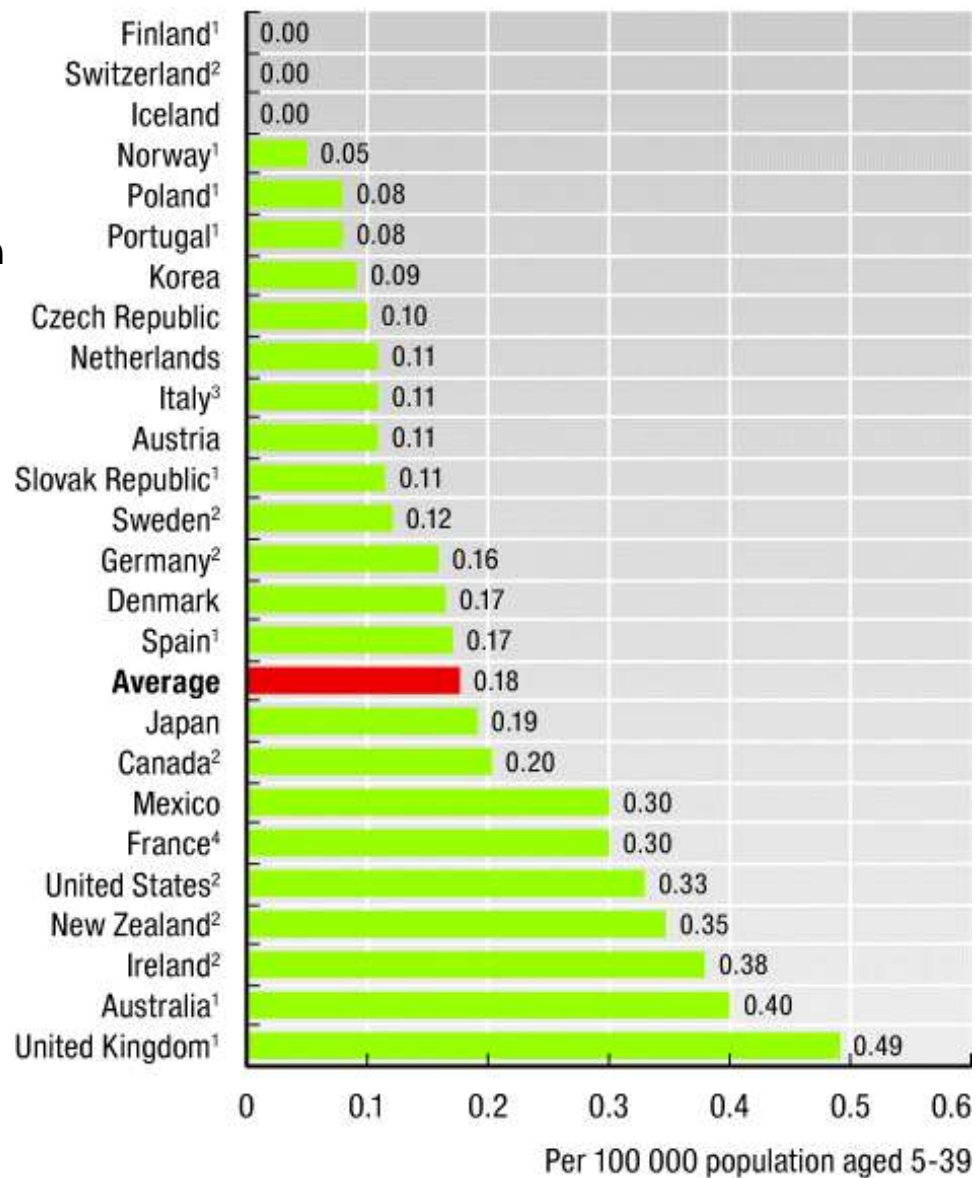
Costs of severe asthma were **one-fourth** of the family income in Bahia/Brazil

Franco R, et al. Allergy 2009



Health at a Glance 2007 OECD Indicators

Asthma mortality/100 000/population
< 40 years 2005



Finnish Asthma Programme 1994-2004

Finnish Allergy Programme 2008-2018

Hospital days due to asthma and COPD in Finland 2000-2010

Reimbursement right

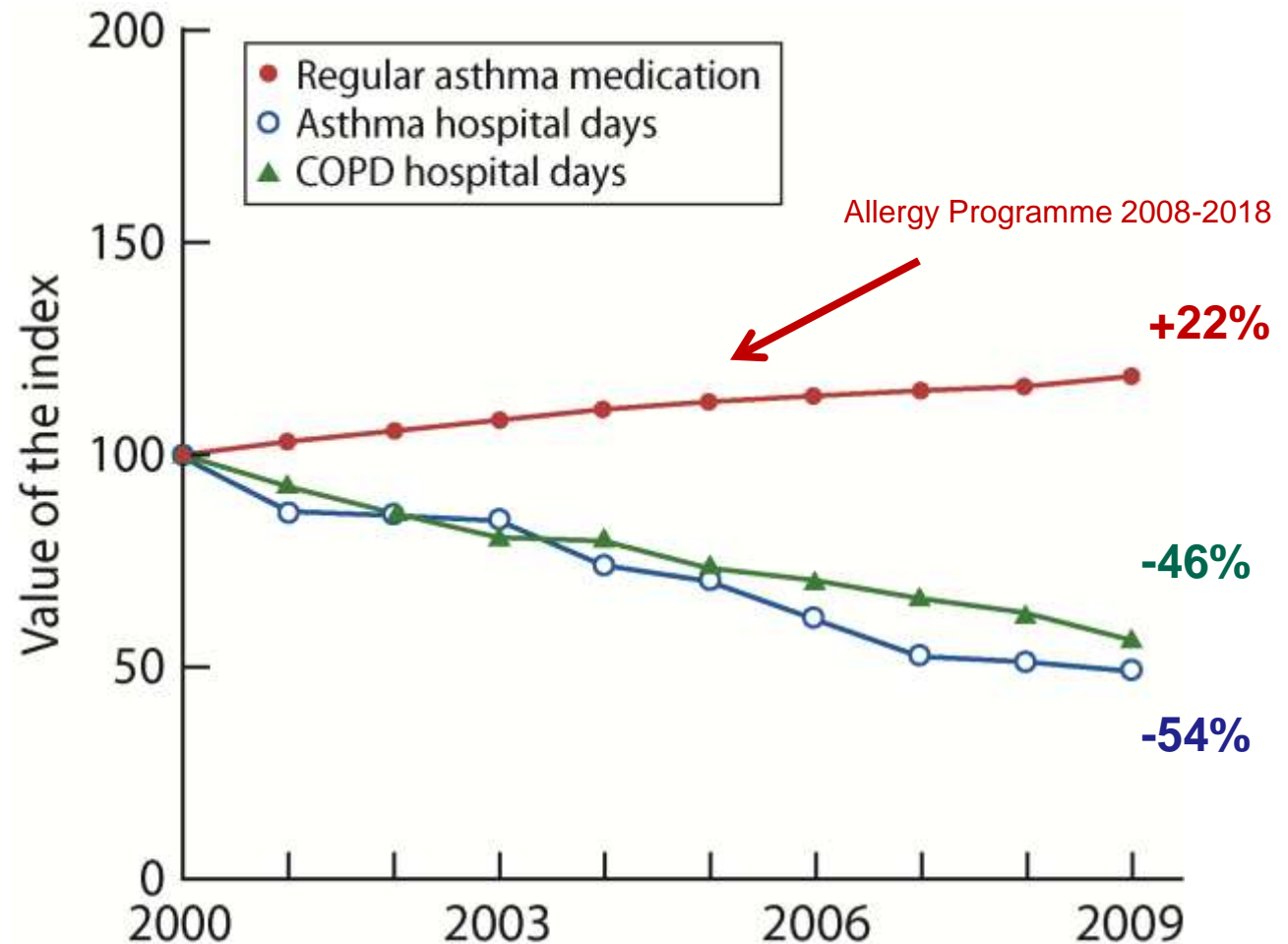
2000=191 268
2010=233 218 (+22%)

Asthma

2000=32 321
2010=14 979 (-54%)

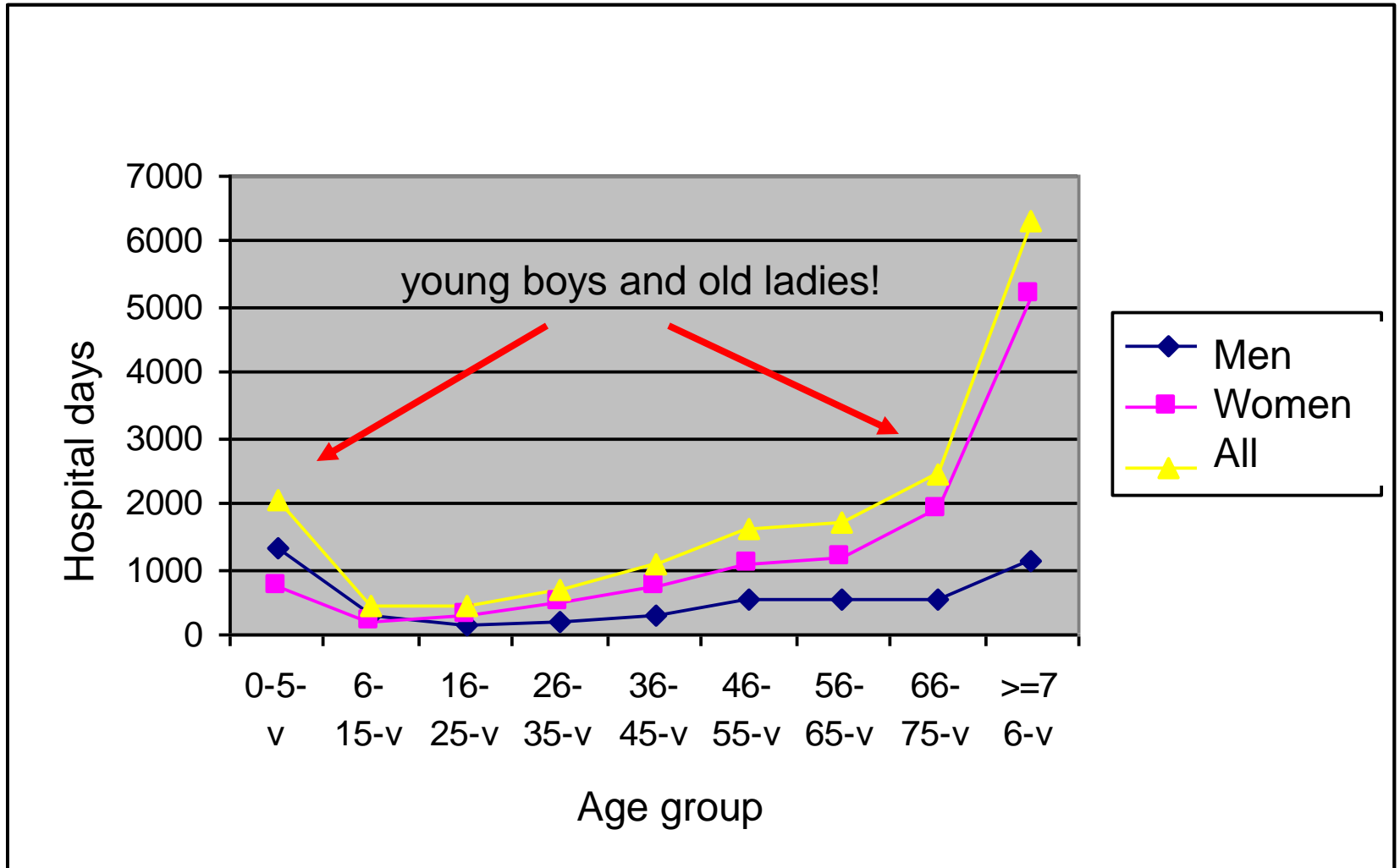
COPD

2000=46 671
2010=23 387 (-46%)



In Finland, hospital days caused by asthma in 2008

(blue=men, pink=women, yellow=all)



Question 1.

What was the potential saving in total asthma costs in Finland (population 5,4 million) in 2010, compared to predicted costs in early 1990s?

1. **50 million €**
2. **100 million €**
3. **300 million €**

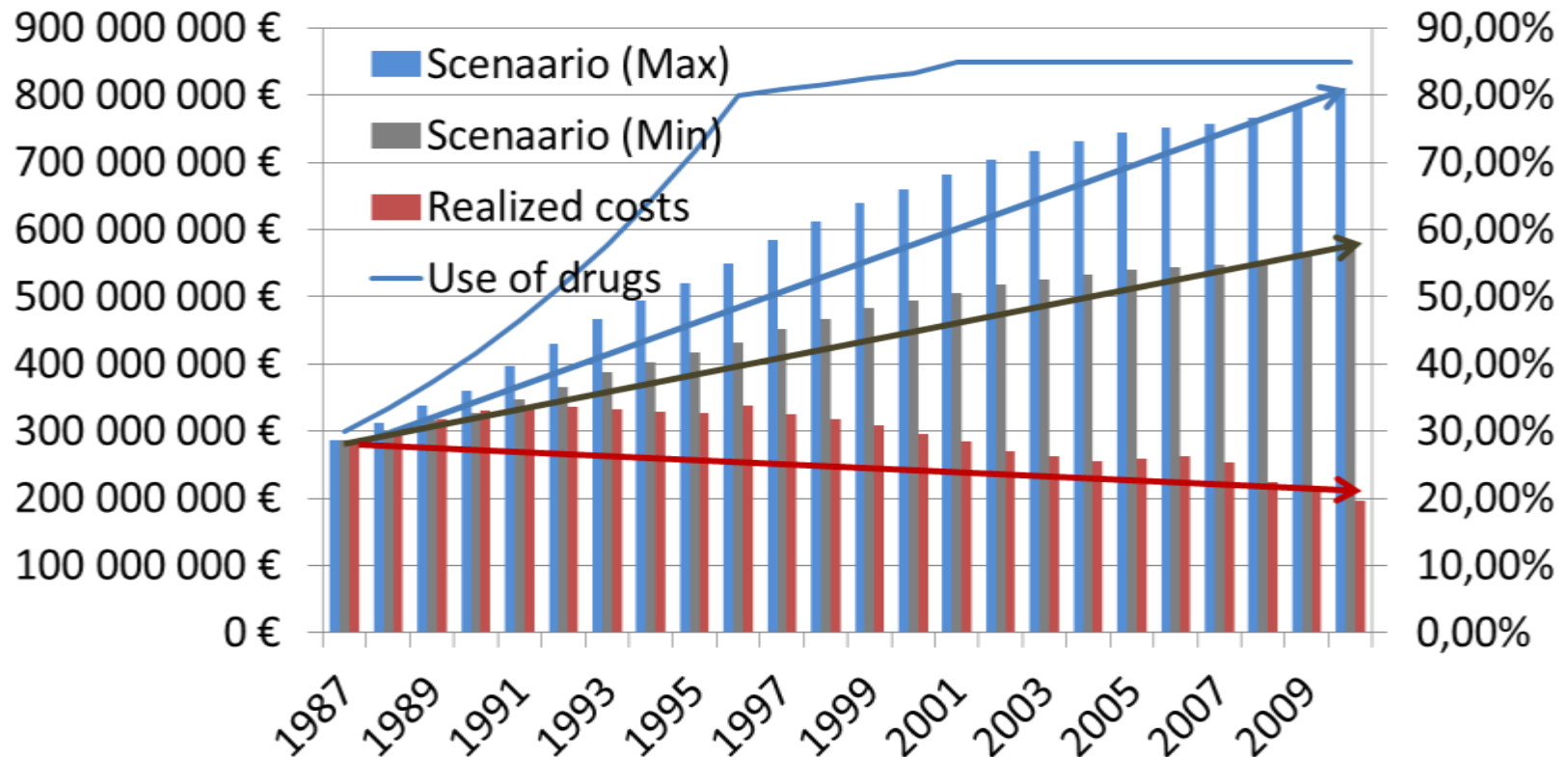
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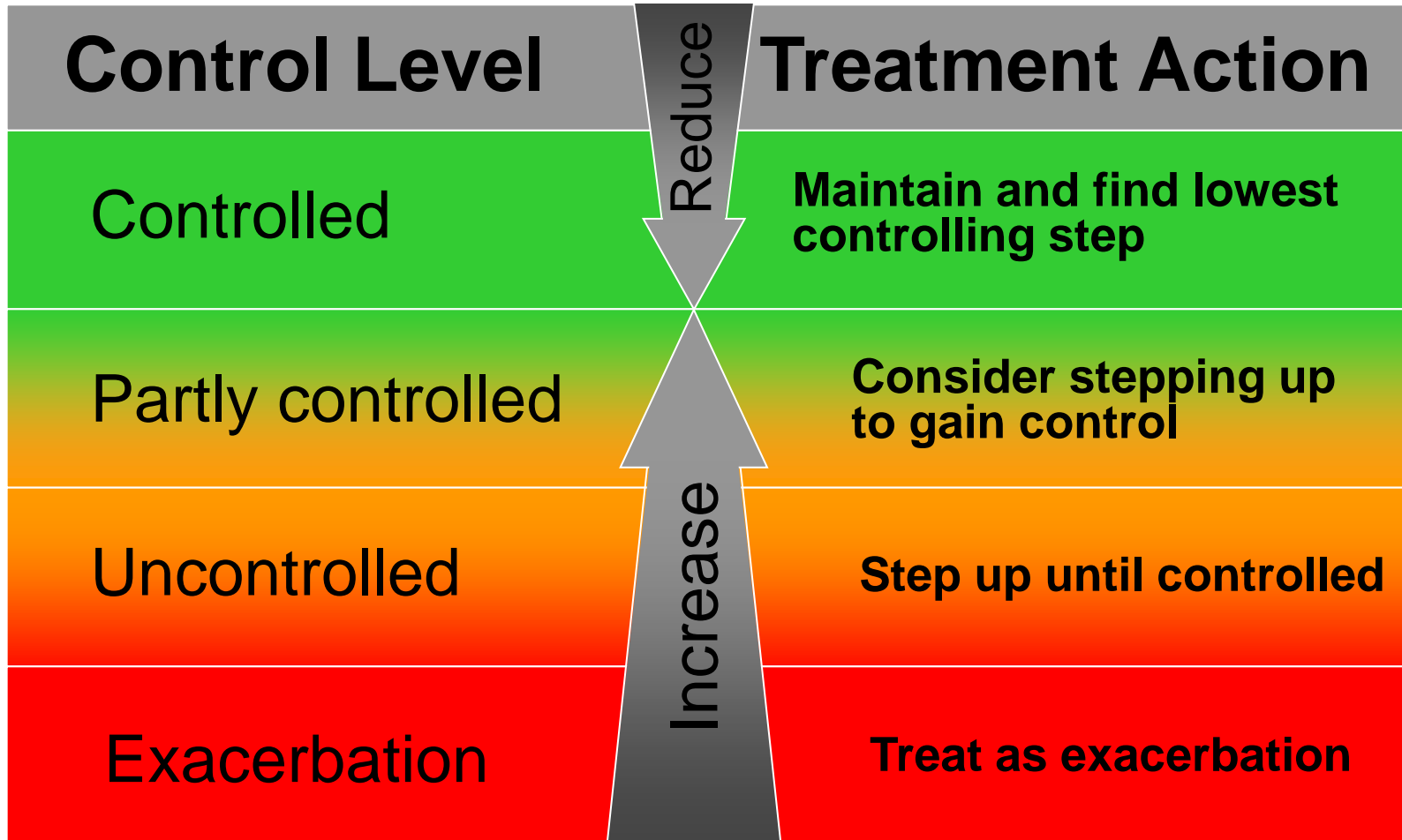
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GINA Asthma Guidelines

November 2006 - updated 2013





Announcing the

Asthma Control Challenge

Cut hospitalizations 50% over the next 5 years

How?
By improving asthma control

- **FitzGerald M, et al.** The GINA Asthma Challenge: reducing asthma hospitalisations. Eur Respir J. 2011
- **Boulet LP, et al.** A guide to the translation of the Global Initiative for Asthma (GINA) strategy into improved care. Eur Respir J. 2012



What do we know?

- The asthma burden can be reduced by relatively simple means
- Early diagnosis, effective anti-inflammatory medication and guided self-management are the keys
- Every asthma death is avoidable
- **For maintenance**, ICS-monotherapy, supplemented by β 2-agonist, controls asthma in most, in mild cases even periodic treatment
- **For maintenance**, fixed Combis to more problematic patients (most patients do not need **regular** β 2-agonist (LABA))



Take part in the GINA Challenge!



ORIGINAL ARTICLE

A Large-Scale, Consortium-Based Genomewide Association Study of Asthma

Miriam F. Moffatt, D.Phil., Ivo G. Gut, Ph.D., Florence Demenais, M.D., David P. Strachan, M.D., Emmanuelle Bouzigon, M.D., Ph.D., Simon Heath, Ph.D., Erika von Mutius, M.D., Martin Farrall, F.R.C.Path., Mark Lathrop, Ph.D., and William O.C.M. Cookson, M.D., D.Phil., for the GABRIEL Consortium*

N Engl J Med 2010;363:1211-21.

GABRIEL Study

2010

Asthma is genetically heterogeneous. Implicated genes suggest a role for communication of epithelial damage to the adaptive immune system and activation of airway inflammation.

