Imperial College London

Researching the Delivery of Respiratory Healthcare

Year 6 Integrated Medicine Course: Respiratory Lecture 2: ***Management of common airway diseases***

Martyn R Partridge MD FRCP
Professor of Respiratory Medicine
NHLI at Charing Cross

Year 6 Integrated Medicine Course

Respiratory Lectures

- ***Lecture 1***:
  Diagnosis and approaches to the breathless patient
- ***Lecture 2:***

  Management of Common Airway Diseases
- ***Lecture 3:***

  Less Common Lung Diseases and preparation for Paces

Year 6 Integrated Medicine Course Respiratory Lectures

- This is revision
- Most already covered in Year 3
- E Learning Modules are available to cover this ground
- All available from the Year 6 page on the Undergraduate intranet

Respiratory Medicine - Asthma - Mozilla Firefox

imperial.ac.uk https://education.med.imperial.ac.uk/e-lectures/Respiratory/Asthma/html_standalone/frameset.html

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Respiratory Medicine

Asthma

Enter

Respiratory Medicine - COPD - Mozilla Firefox

imperial.ac.uk https://education.med.imperial.ac.uk/e-lectures/Respiratory/COPD/html_standalone/frameset.html

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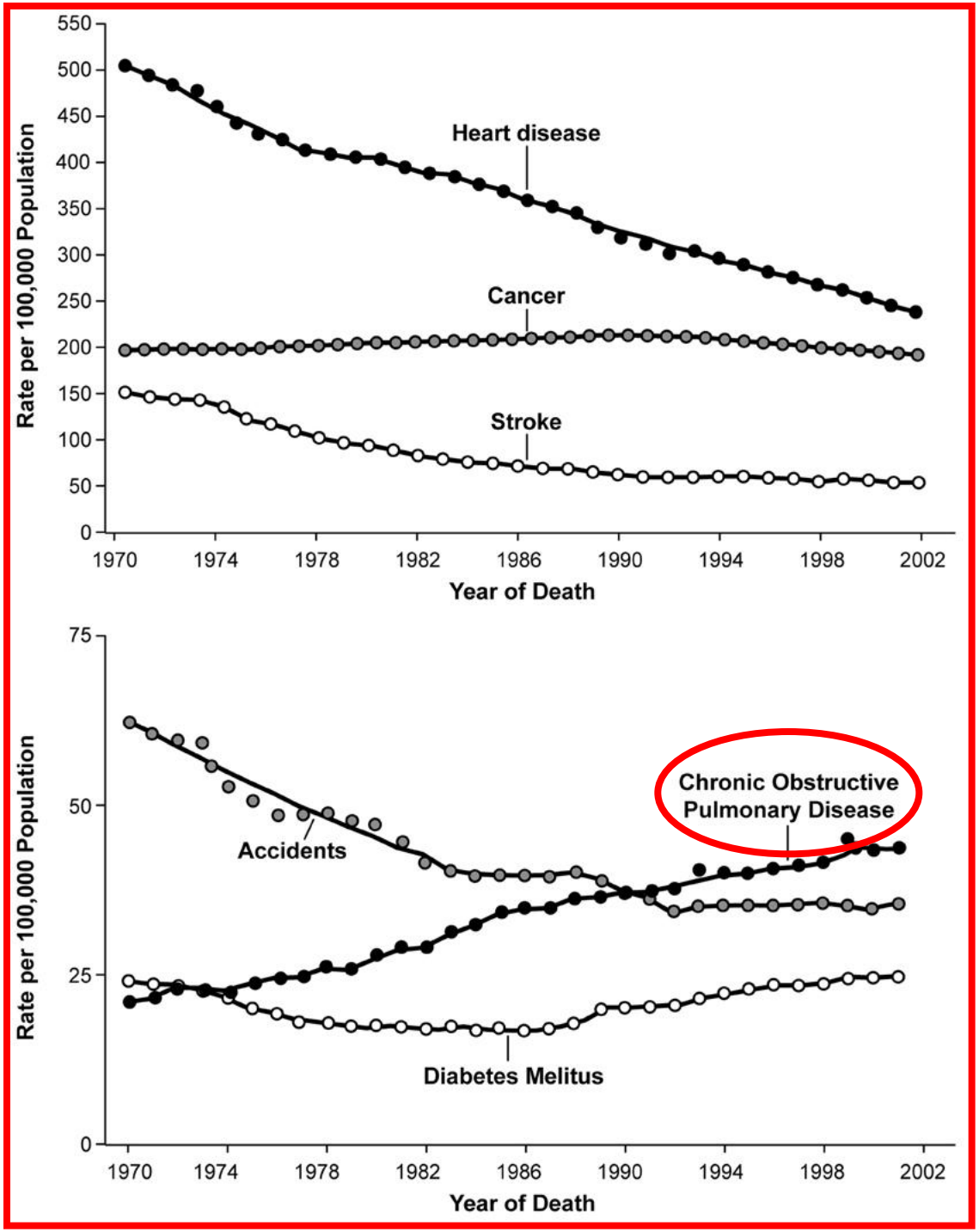
Respiratory Medicine

COPD

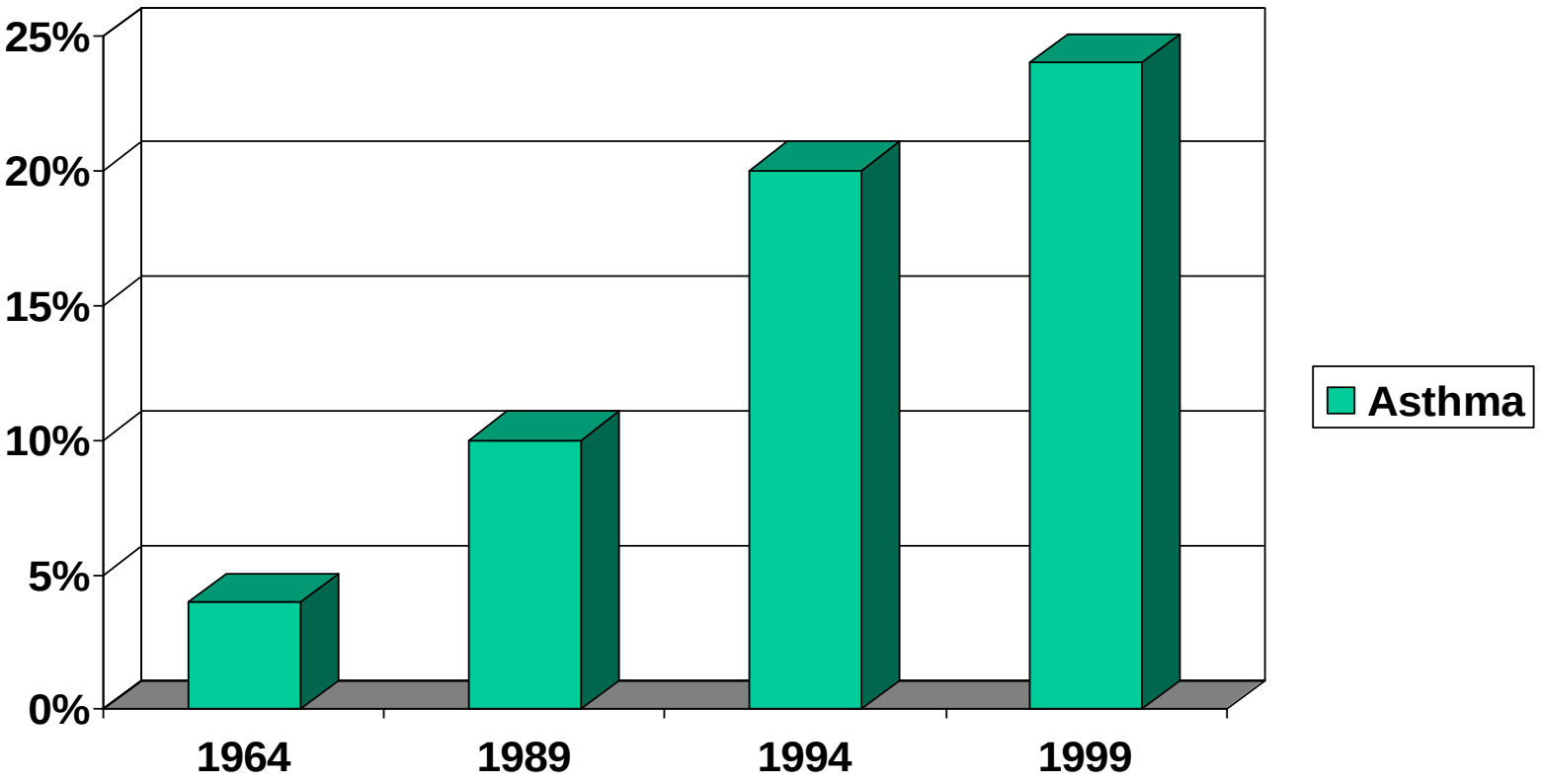
Enter

Of the six leading causes of death in the United States, only COPD has been increasing steadily since 1970

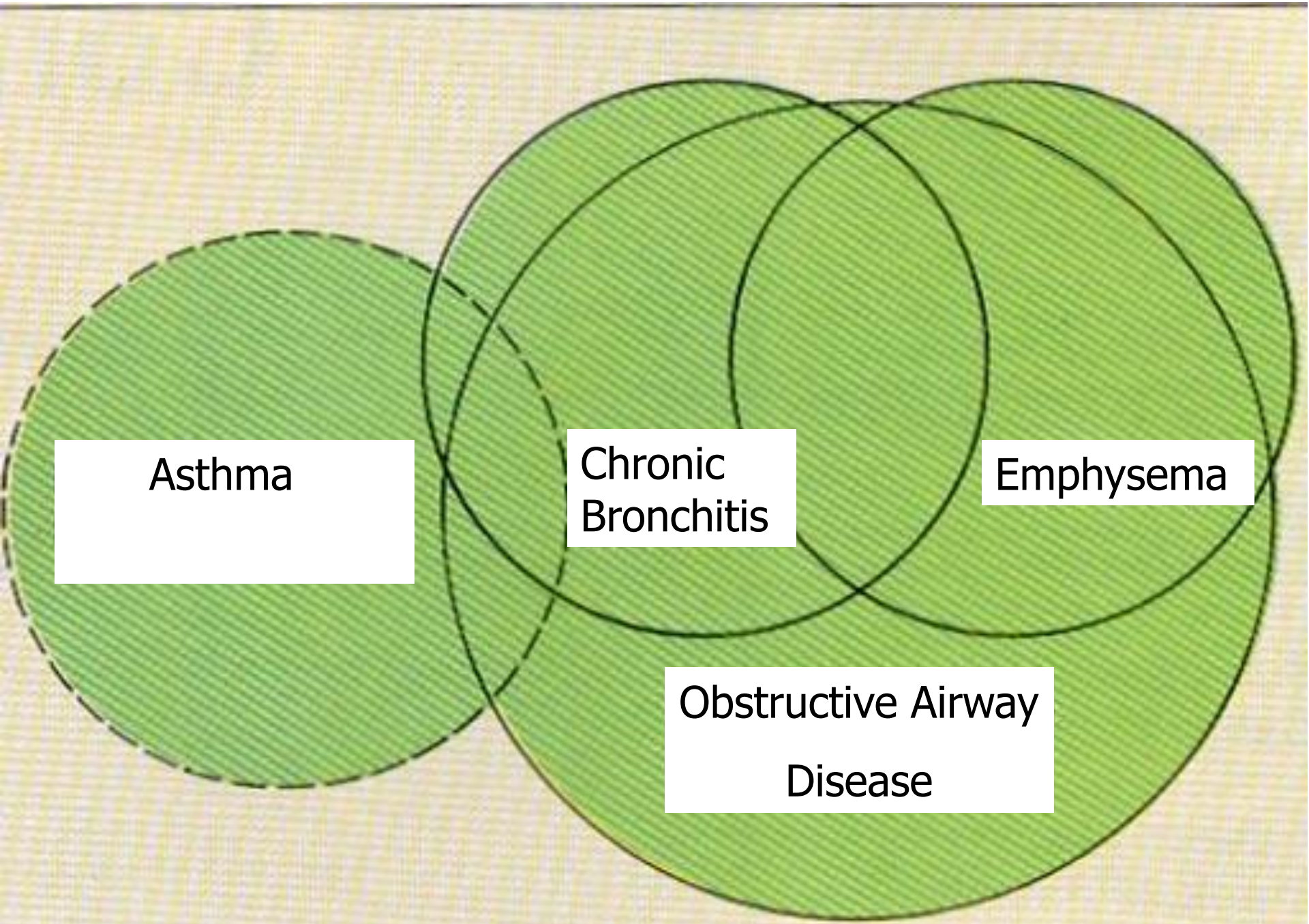


Source: Jemal A. et al. *JAMA* 2005

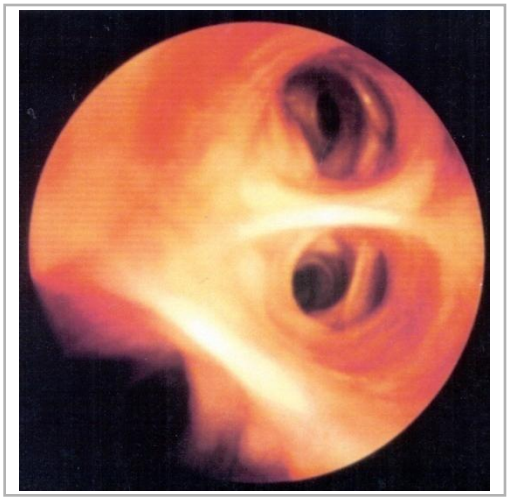
Increasing prevalence of asthma (9-12 year olds)

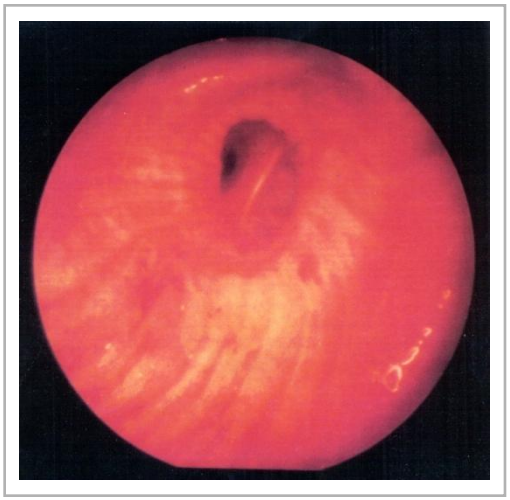


Devenny A et al BMJ 2004 329: 489-90


Asthma
Chronic Bronchitis
Emphysema
Obstructive Airway Disease

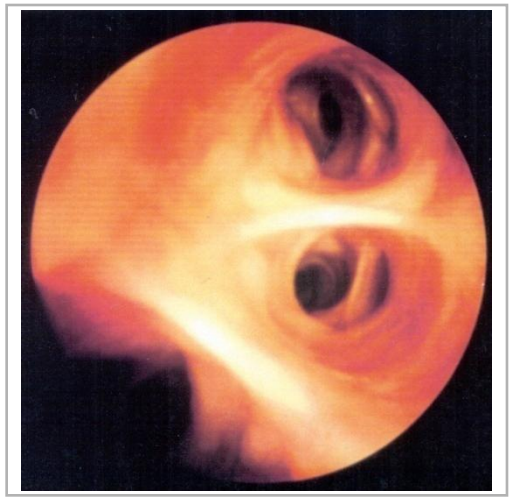
Asthma

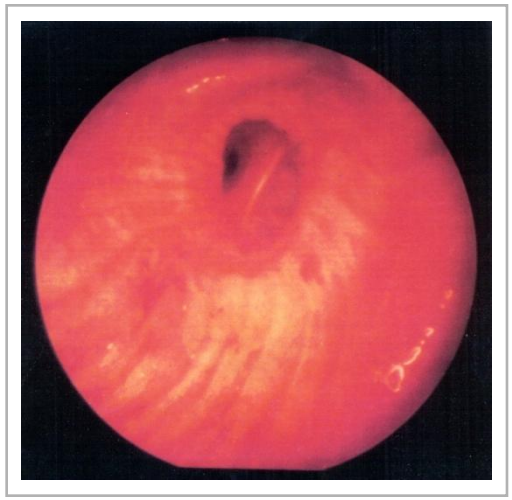




- chronic inflammatory disorder of the airways … associated with airway hyper-responsiveness … and variable, airflow obstruction within the lung

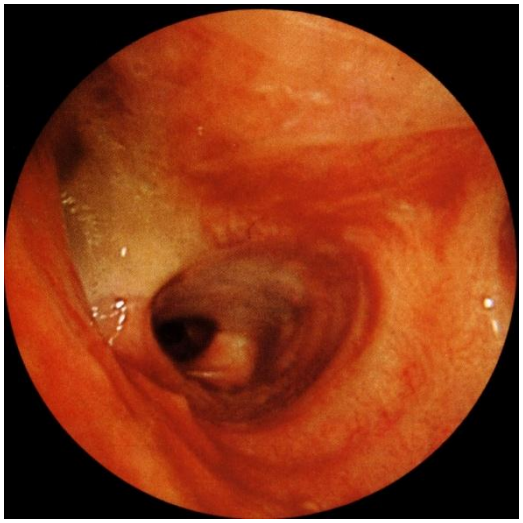
Asthma

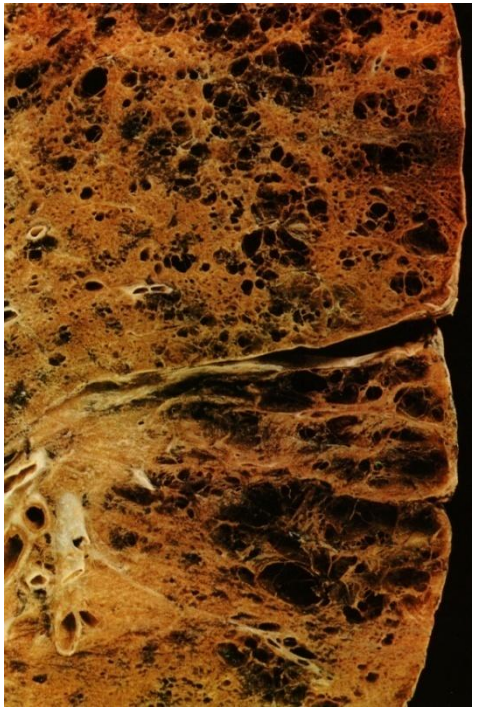




- chronic inflammatory disorder of the airways … associated with airway hyper-responsiveness … and variable, airflow obstruction within the lung

C O P D

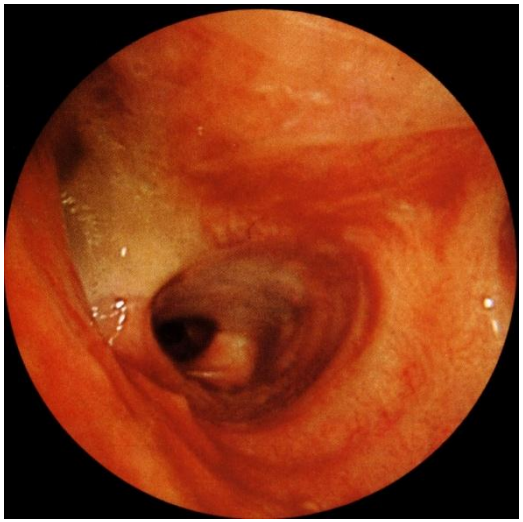


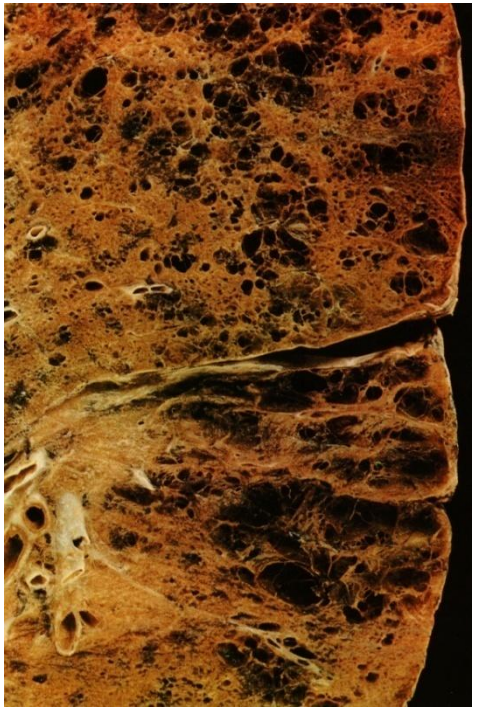


- **COPD is a preventable and treatable disease with some significant extra-pulmonary effects that may contribute to the severity in individual patients**
- **Pulmonary component characterized by airflow limitation that is not fully reversible**
- **Airflow limitation usually progressive and associated with an abnormal inflammatory response of the lung to noxious particles or gases**

GOLD, Update 2008

C O P D





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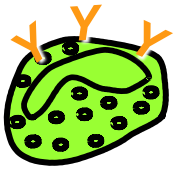
GOLD, Update 2008

ASTHMA

Allergens

Ep cells



Mast cell

CD4+ cell (Th2)

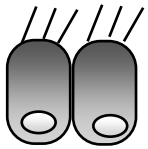
Eosinophil

Bronchoconstriction
AHR

COPD

Cigarette smoke

Alv macrophage



Ep cells

CD8+ cell (Tc1)

Neutrophil

Small airway narrowing
Alveolar destruction

Airflow Limitation

Reversible

Irreversible

www.ginasthma.com www.goldcopd.org

Symptoms

Asthma

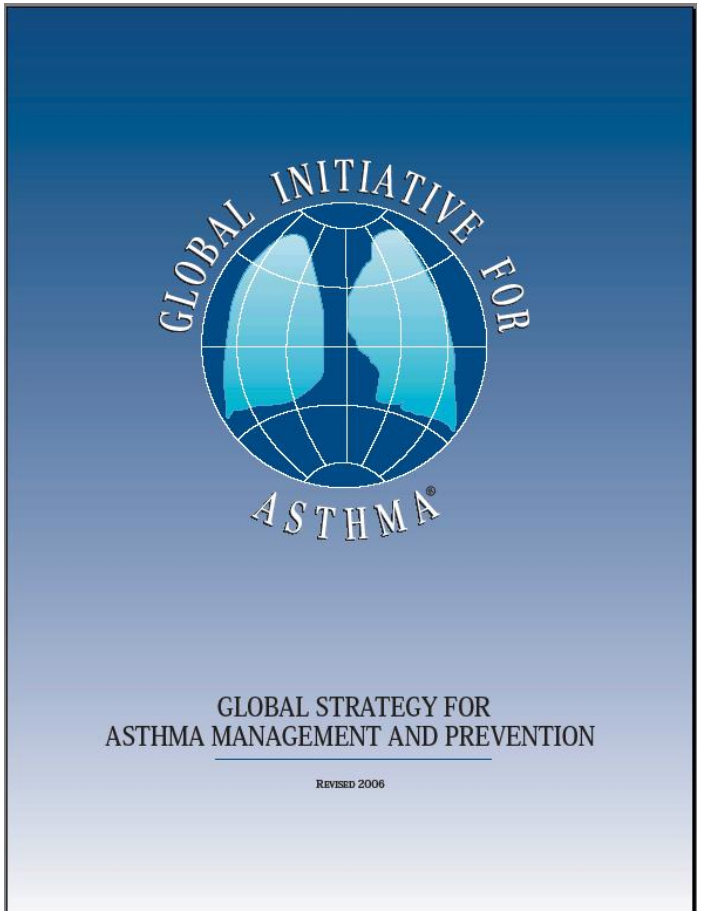
- Variable breathlessness and/or chest tightness
- Wheezing
- Symptoms awaken patient from sleep or are worse in the early morning
- When bad, short of breath at rest or on exertion
- May be completely free of symptoms between attacks

COPD

- Continual symptoms
- Breathless usually on exertion; until advanced often ok at rest
- Cough
- Sputum
- Progressive

Remember last weeks lessons re objective confirmation of diagnosis

Guideline goals for successful asthma management



- Achieve and maintain control of symptoms
- Maintain normal activity levels – including exercise
- Maintain pulmonary function close to normal levels
- Avoid adverse effects from asthma medications
- Prevent asthma exacerbations
- Prevent asthma mortality

Guideline goals for successful asthma management

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Guideline goals for successful asthma management

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- **Avoid adverse effects from asthma medications**
- **Prevent asthma exacerbations**
- **Prevent asthma mortality**

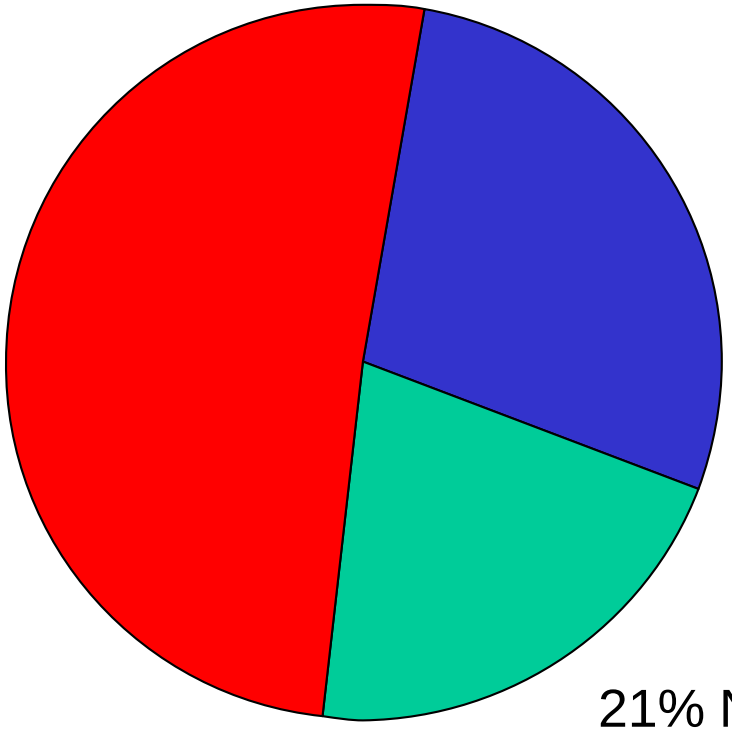
Levels of Asthma Control

Characteristic	Controlled (All of the following)	Partly Controlled (Any measure present in any week)	Uncontrolled
Daytime symptoms	None (twice or less/week)	More than twice/week	**Three or more features of partly controlled asthma present**
Limitations of activities	None	Any	
Nocturnal symptoms/awakening	None	Any	
Need for reliever/ rescue treatment	None (twice or less/week)	More than twice/week	
Lung function (PEF or FEV_1)‡	Normal	< 80% predicted or personal best (if known)	
Exacerbations	None	One or more/year*	One in any week†

** Any exacerbation should prompt review of maintenance treatment to ensure that it is adequate.*
† By definition, an exacerbation in any week makes that an uncontrolled asthma week.
‡ Lung function is not a reliable test for children 5 years and younger.

Despite ICS or ICS/LABA therapy, only 28% of patients were well-controlled according to the ACQ

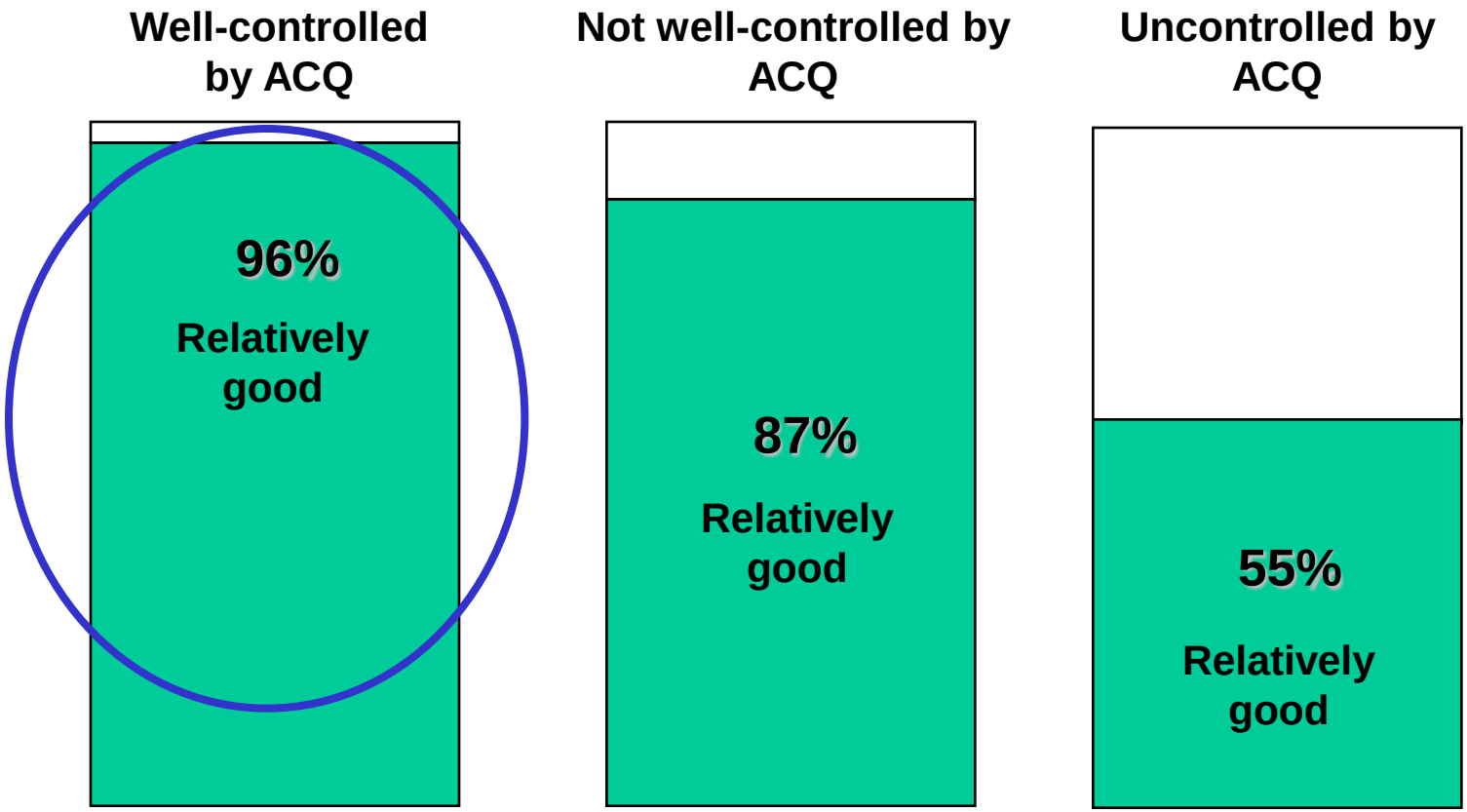
Partridge MR, BMC Pulmonary Medicine 2006



ACQ-6 Summary Score	
Well-controlled:	0.0 to 0.74
Not well controlled:	0.75 to 1.5
Uncontrolled:	1.5+

Most patients perceive their asthma to be better controlled than the ACQ showed

Proportion of patients reporting disease 'relatively good' in the past week:



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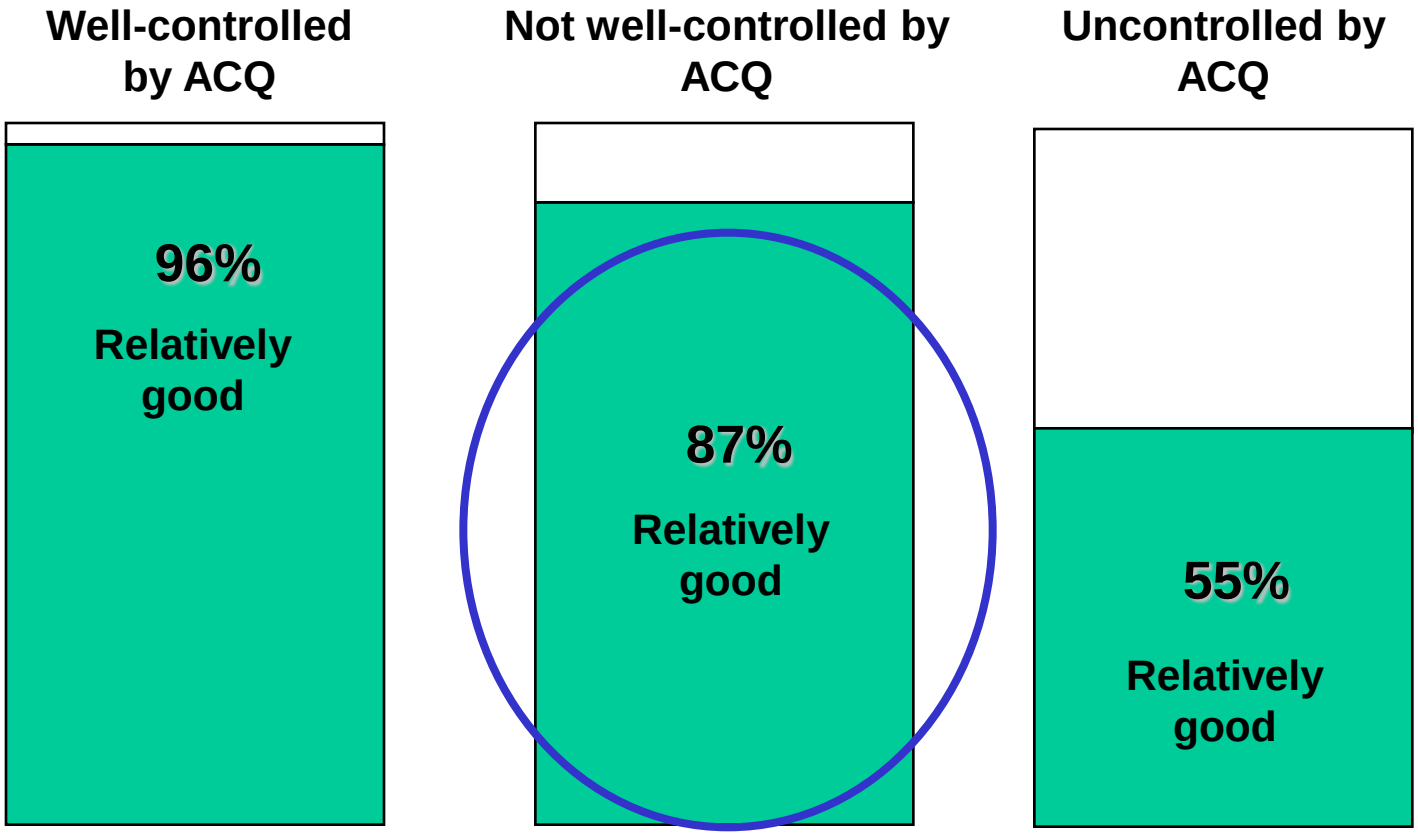


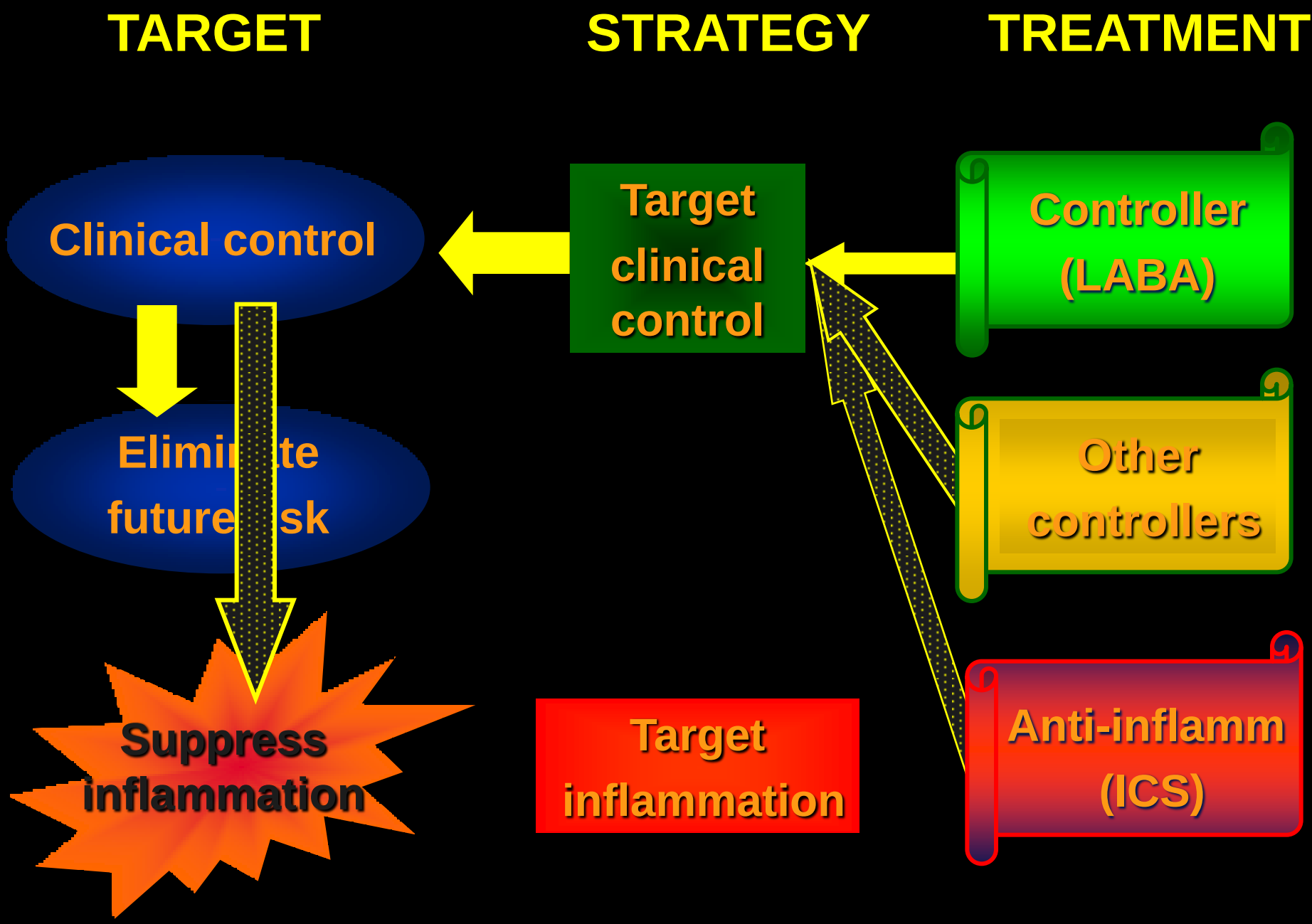

But if you had asked me about last week…..
Fine!
How are you?
Great!Next Patient Please!

Assessment: Royal College of Physicians of London three questions

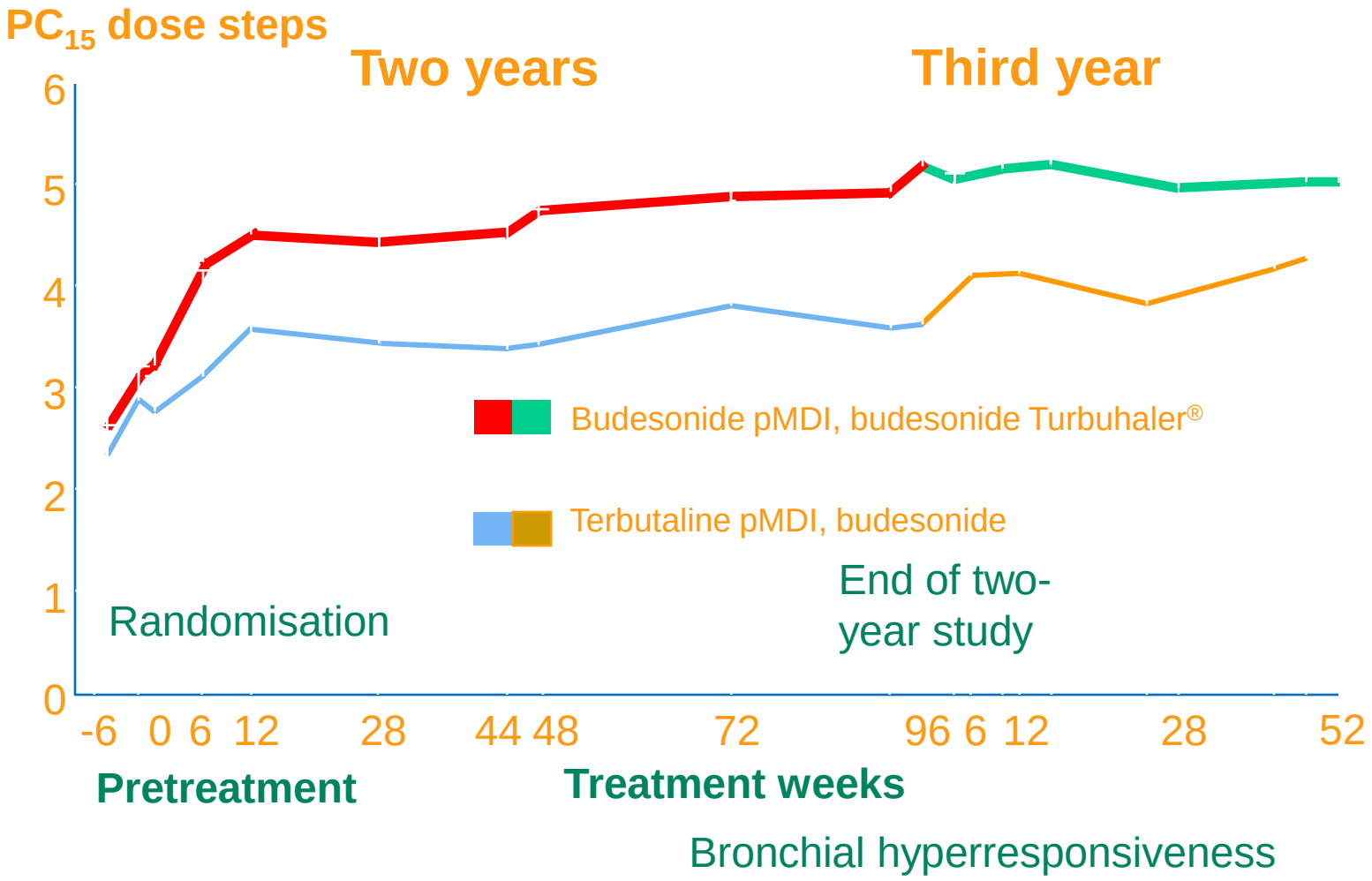
IN THE LAST WEEK / MONTH	YES	NO
"Have you had difficulty sleeping because of your asthma symptoms (including cough)?"	☐	☐
"Have you had your usual asthma symptoms during the day (cough, wheeze, chest tightness or breathlessness)?"	☐	☐
"Has your asthma interfered with your usual activities (e.g. housework, work, school, etc)?"	☐	☐
Date _____ / _____ / _____		

- Applies to all patients with asthma aged 16 and over.
- Only use after diagnosis has been established.

Outcomes and audit. Thorax 2003; 58 (Suppl I): i1-i92


TARGET
STRATEGY
TREATMENT
Clinical control
Eliminate future risk
Suppress inflammation
Target clinical control
Target inflammation
Controller (LABA)
Other controllers
Anti-inflamm (ICS)

The importance of inhaled steroids in maintaining optimal airway function.



Haahtela *et al.* 1994

Guideline goals for successful asthma management

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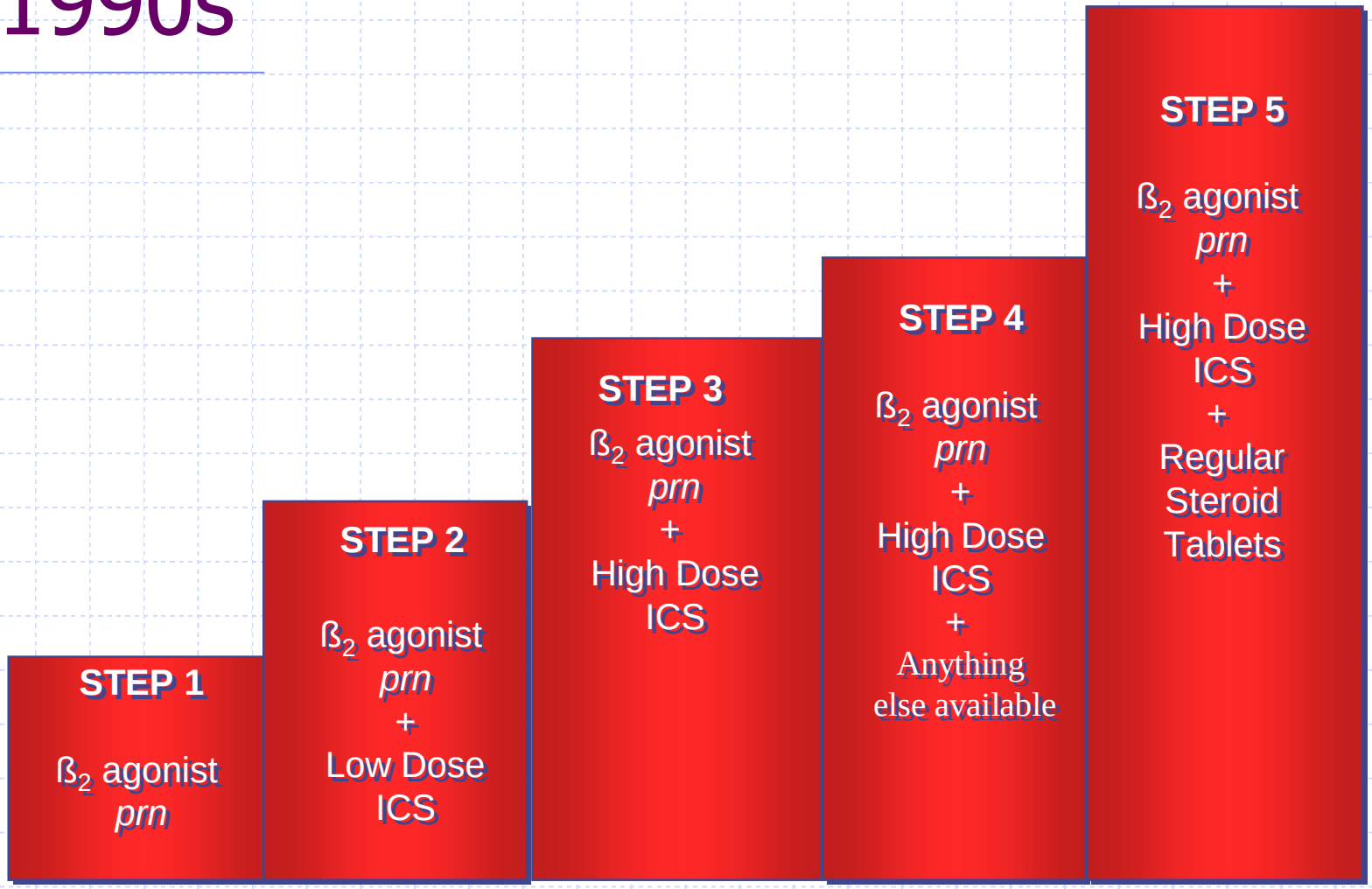
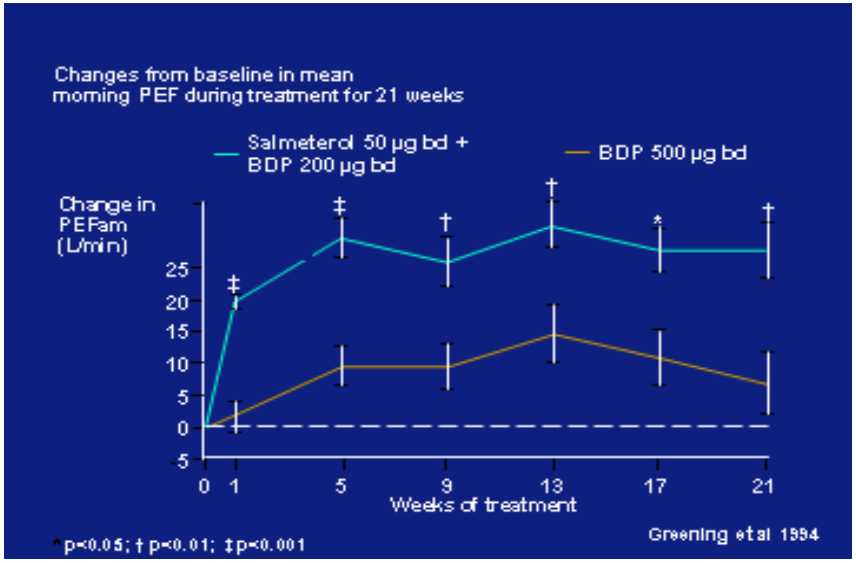
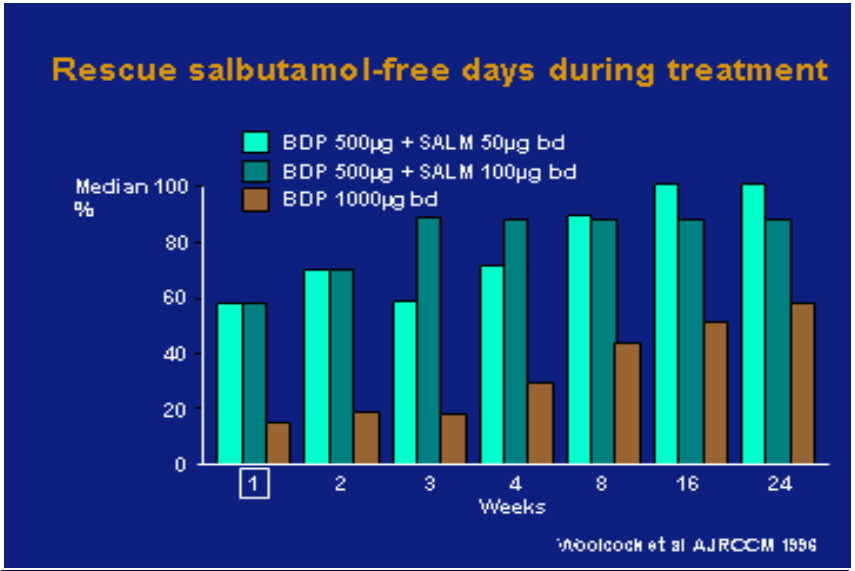
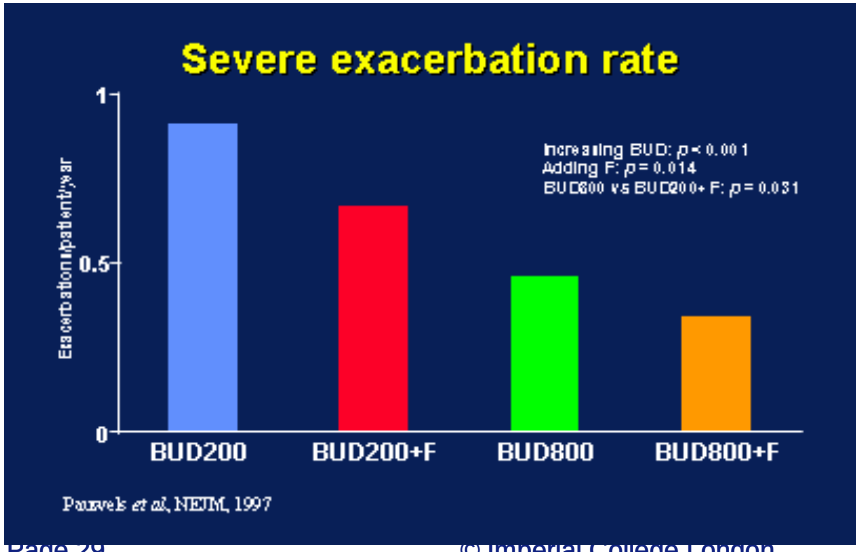
Guidelines on Asthma Management 1990s

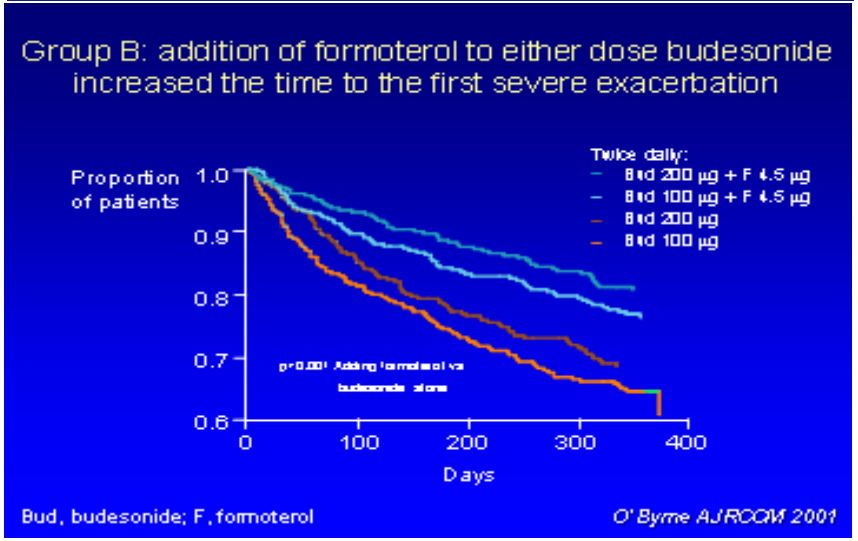


New understanding of asthma treatments 1994-2004

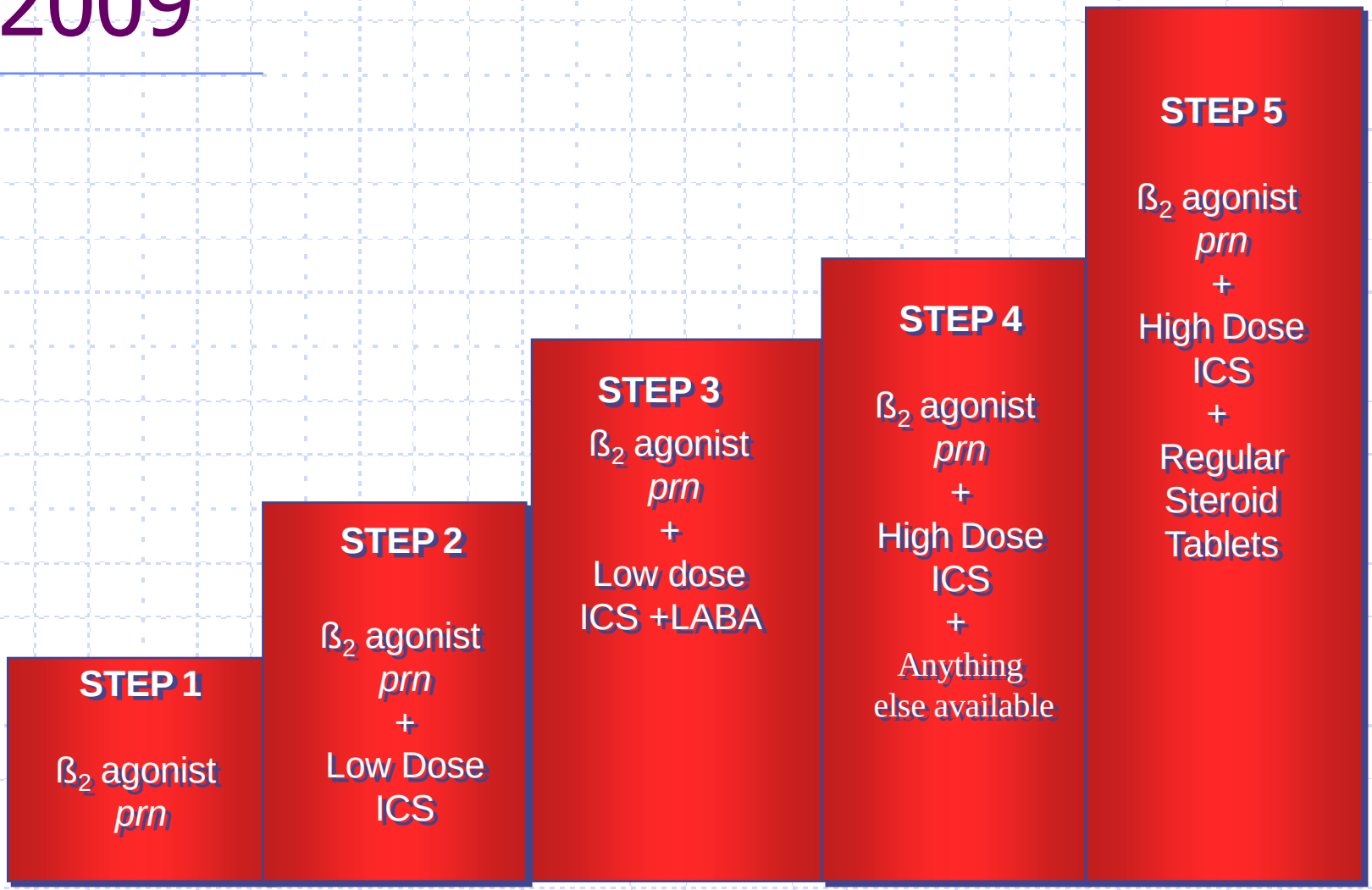








Guidelines on Asthma Management 2009



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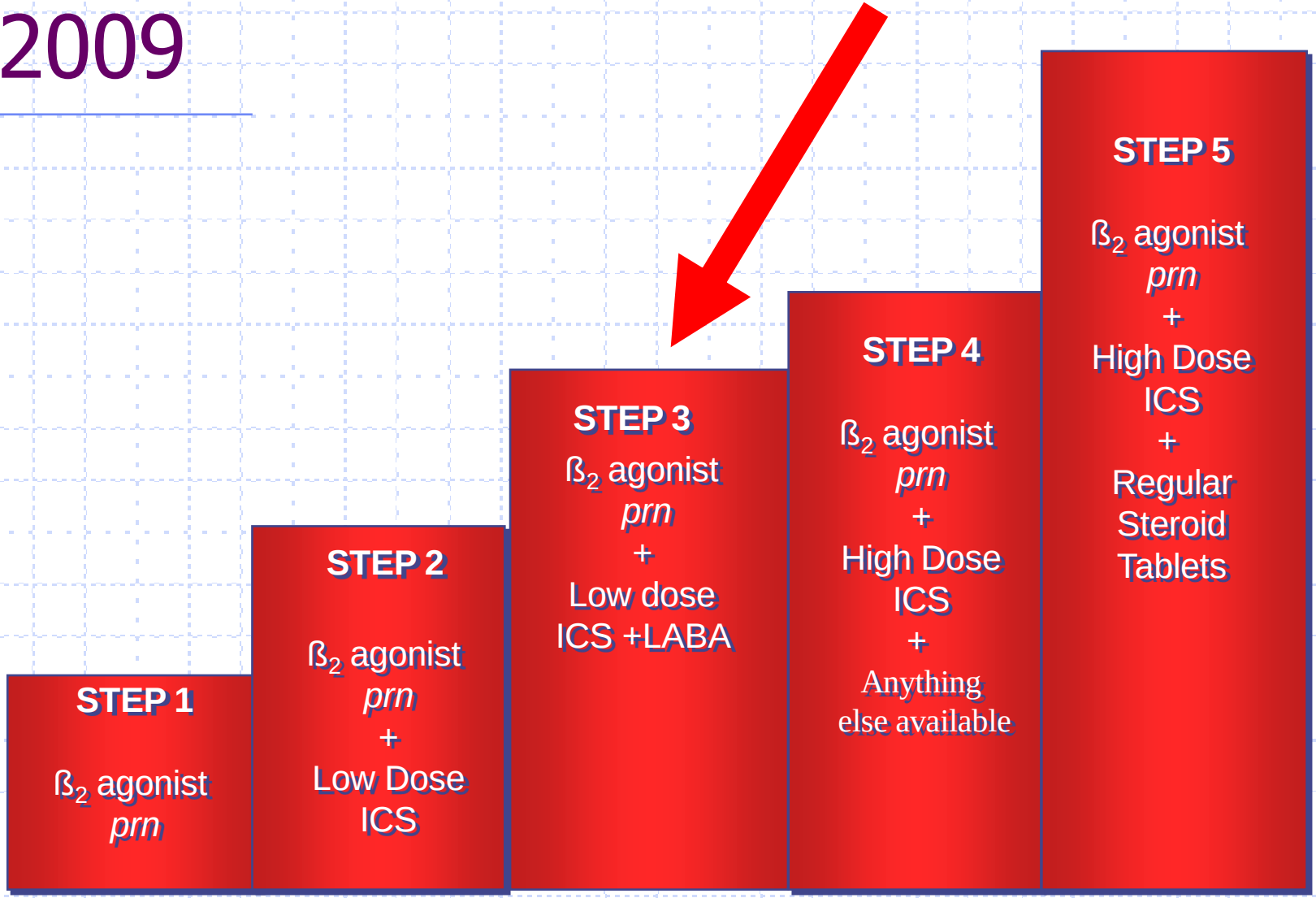
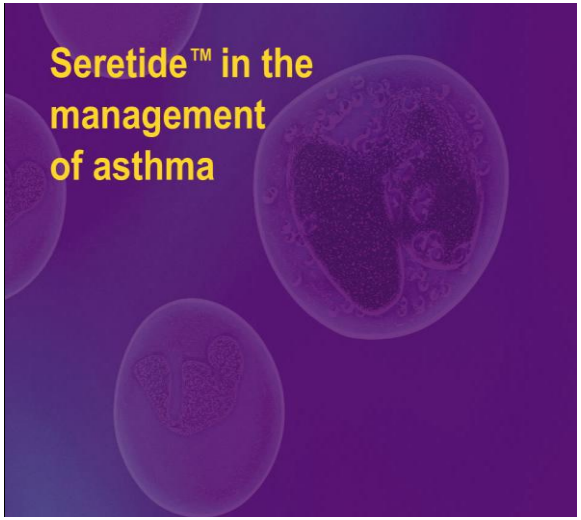
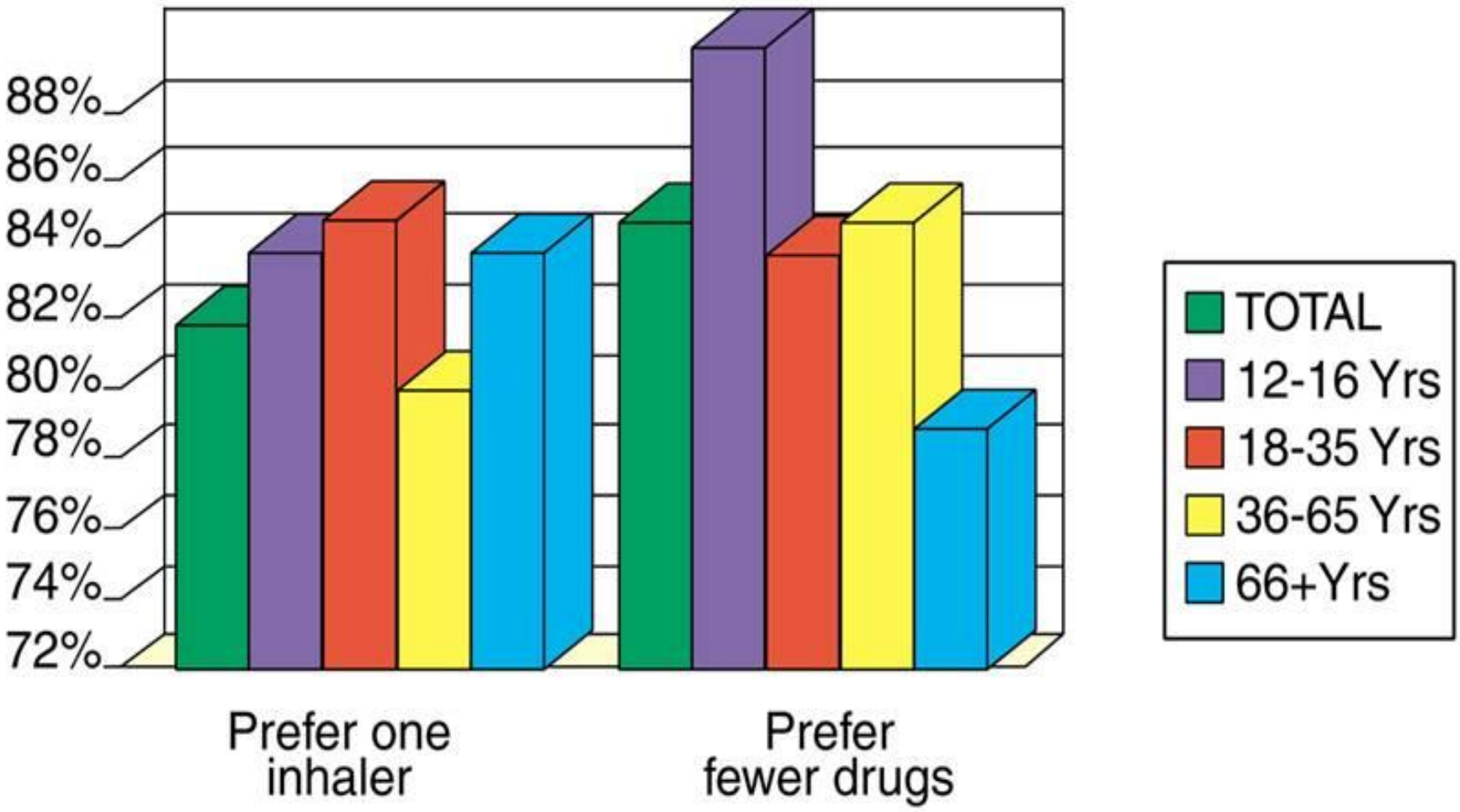


Making things simpler for patients



Patient wishes to use just one inhaler and fewer drugs (n=454). Stahl E et al ATS 2002



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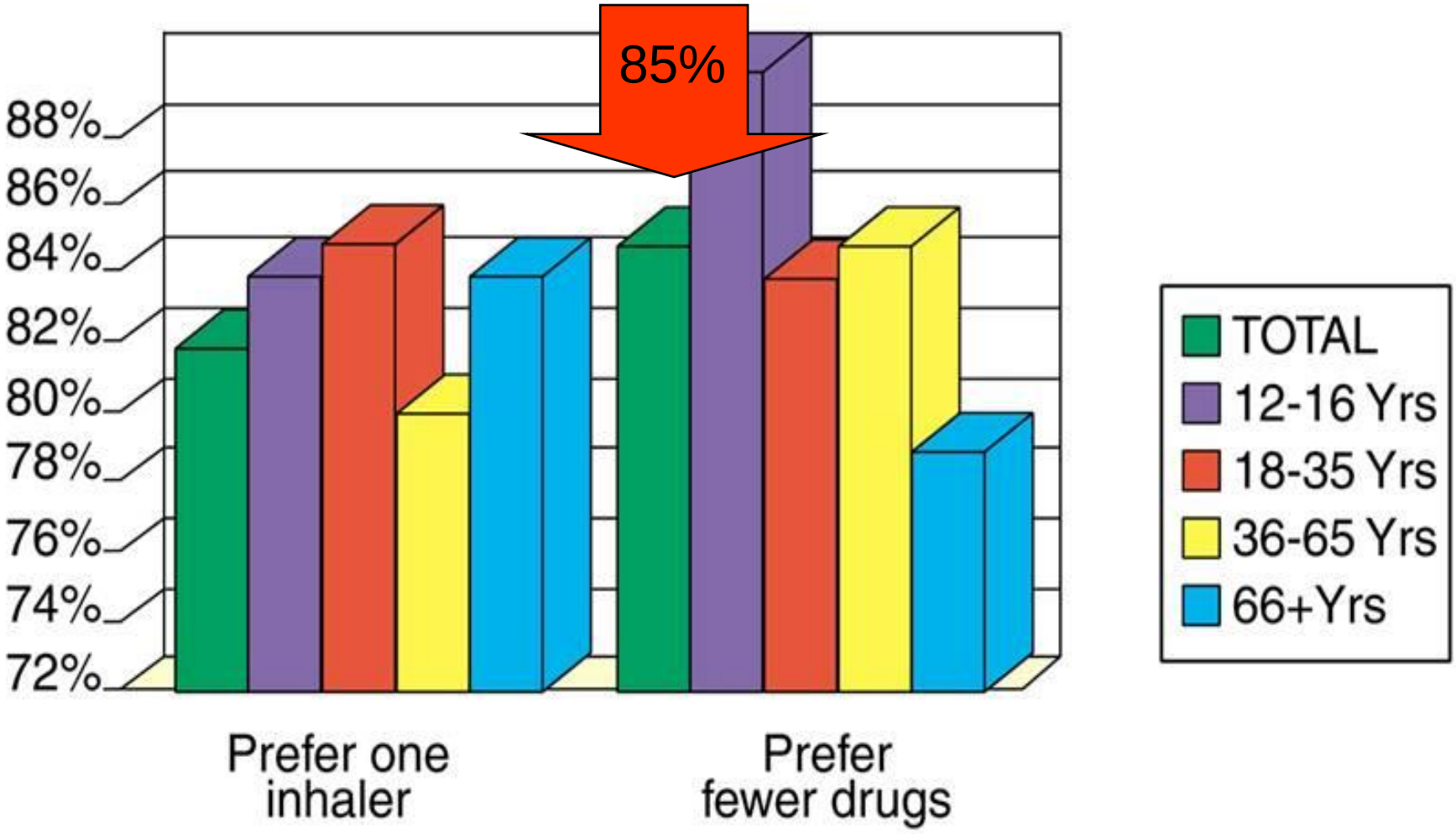

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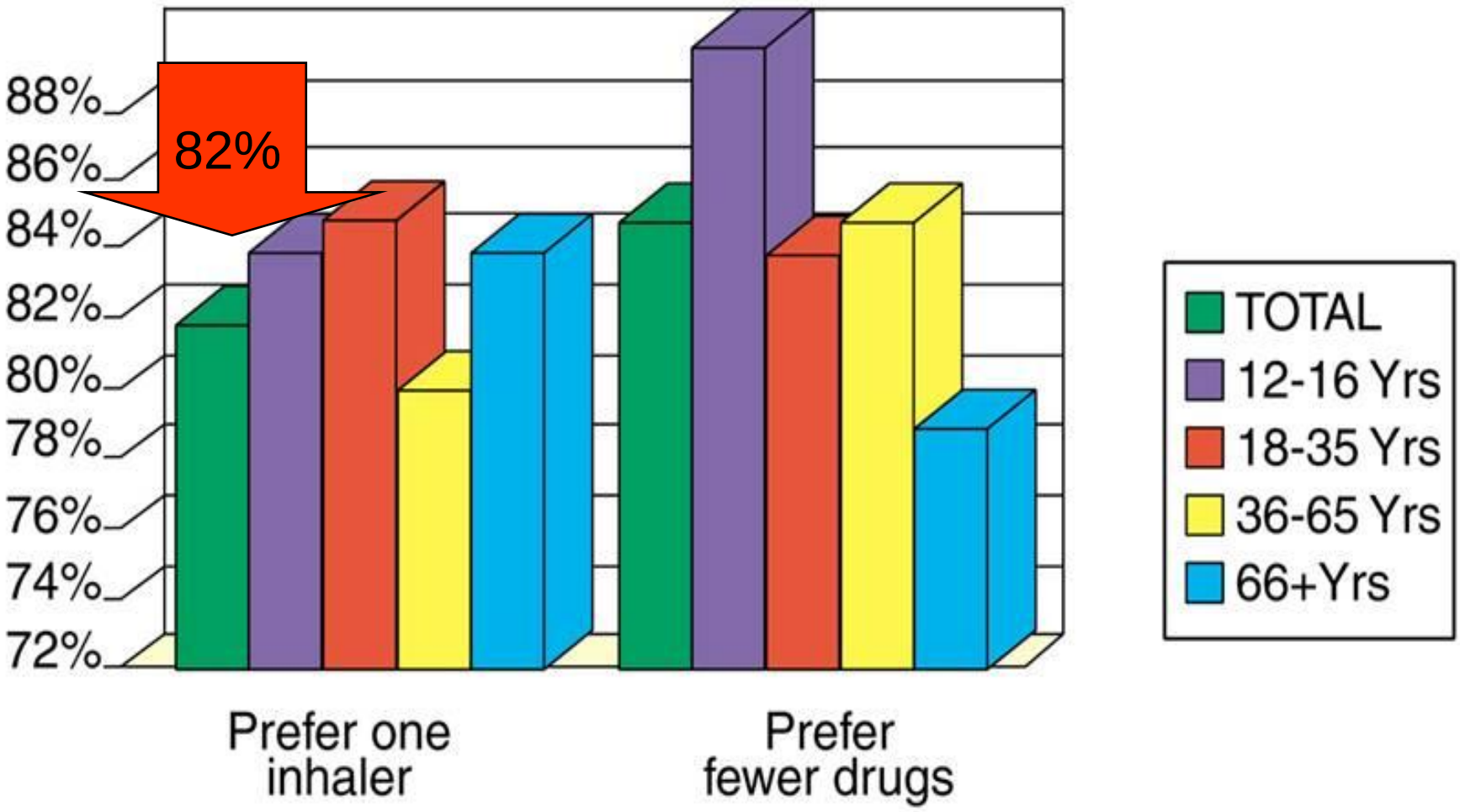

Why might patients prefer combination inhalers?

- Less to carry about
- Less need to understand the type and purpose of each
- Less worry about one prescription finishing before the other
- Less expense
- Less to remind them they have a “disease”

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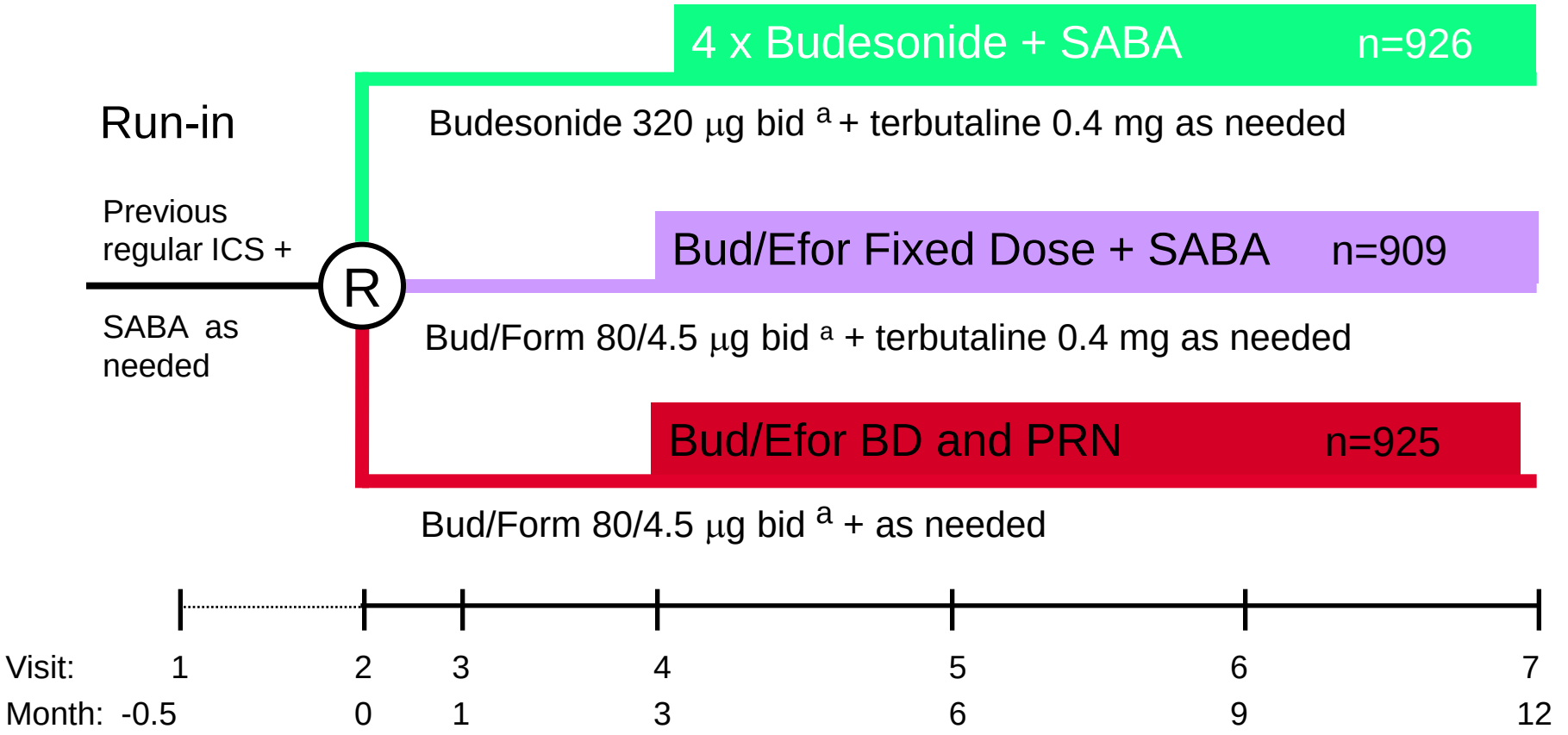
And (from our point of view)
AVOIDS THE RISK OF MONOTHERAPY

Henry Hyde Salter (1823-1871)

Differentiated asthma from other causes of breathlessness as “paroxysmal dyspnoea of a peculiar character with intervals of healthy respiration between attacks”

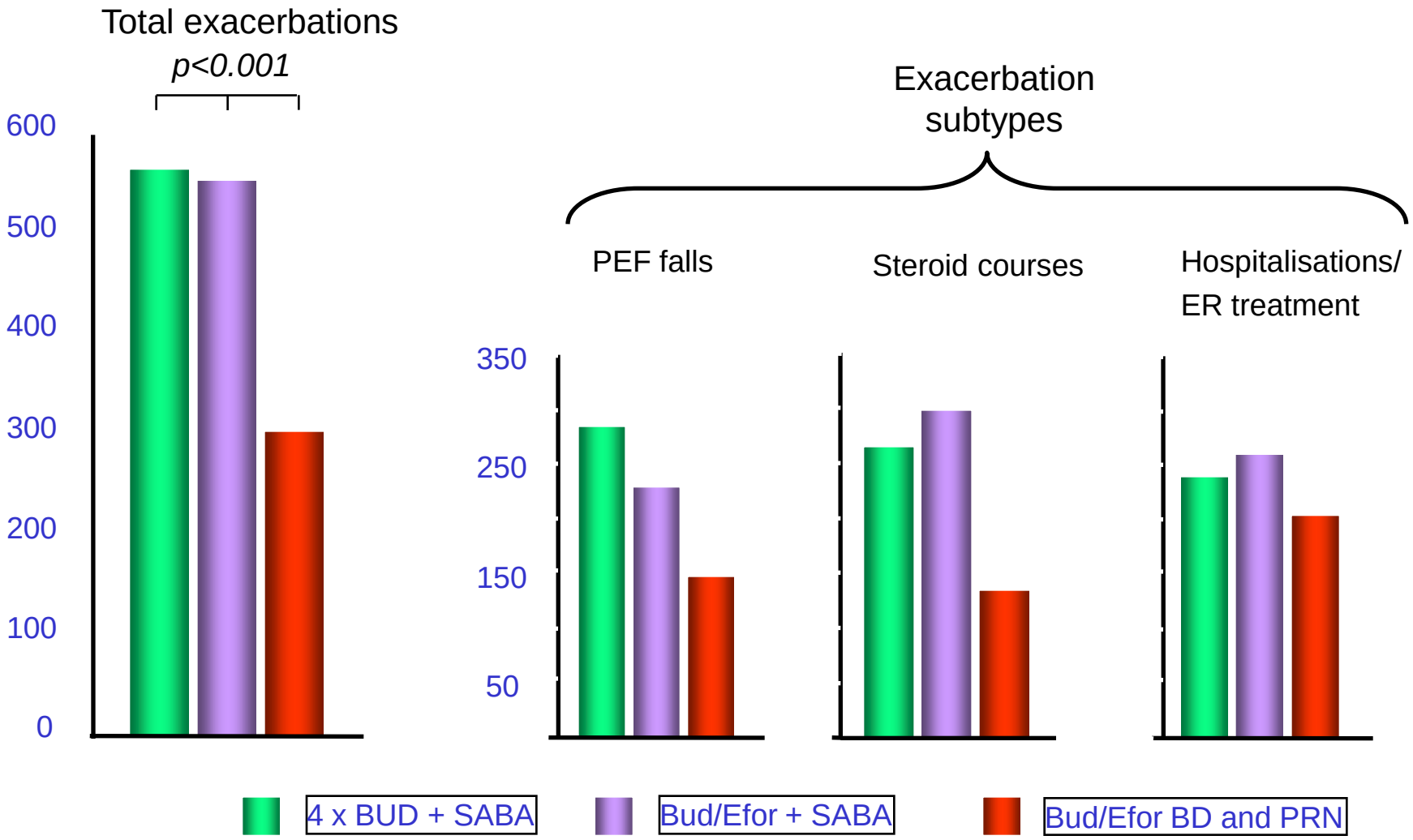
How do combination Steroid /Formoterol Inhalers used regularly and prn compare with High dose steroids alone?

O'Byrne PM et al. Am J Respir Crit Care Med 2005; 171:129-136



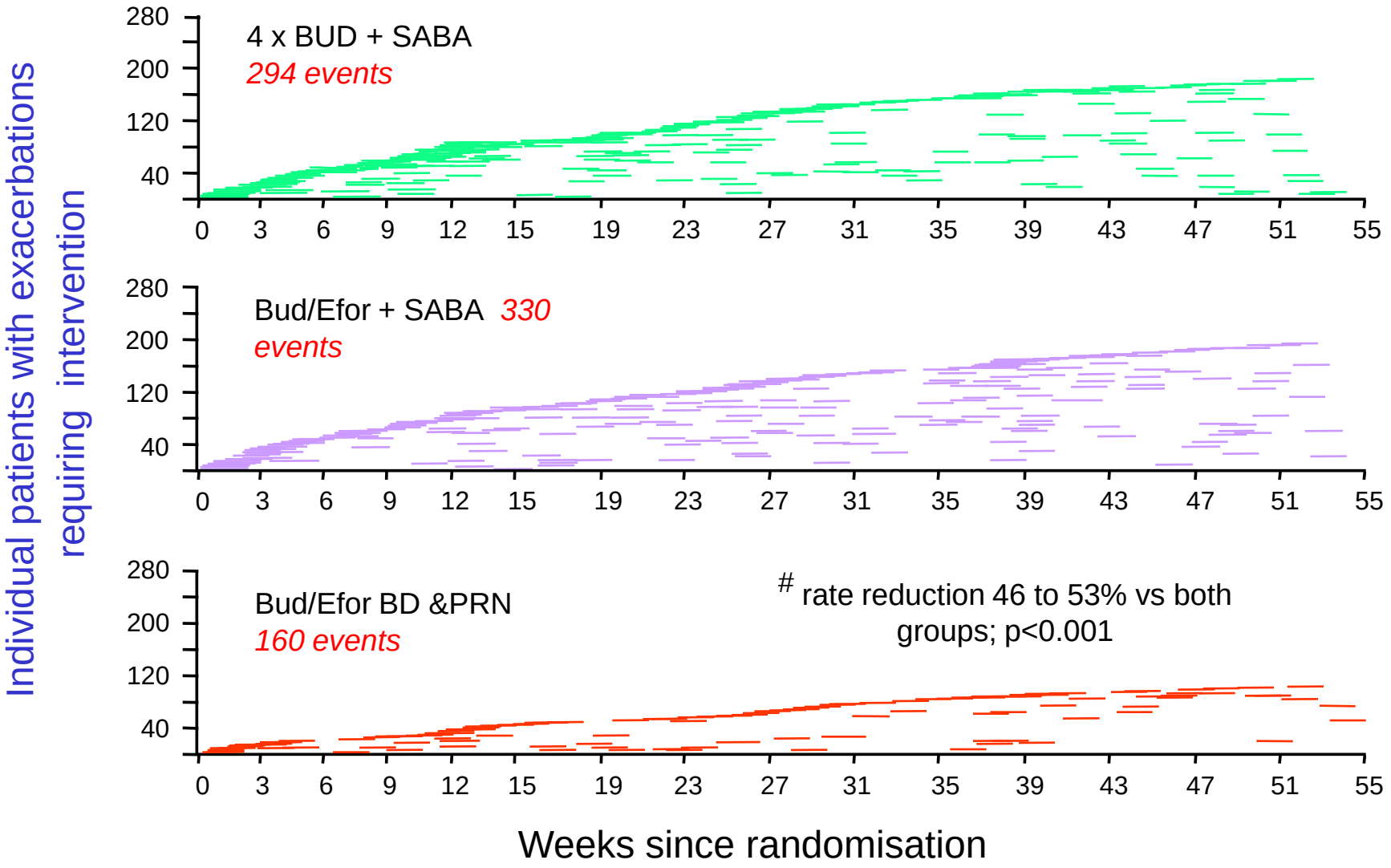
a *Children <12 years received half the daily maintenance dose with a once daily regimen*

Severe Exacerbations



O'Byrne PM et al. Am J Respir Crit Care Med 2005; 171:129-136

Total Asthma Exacerbations Requiring Medical Intervention



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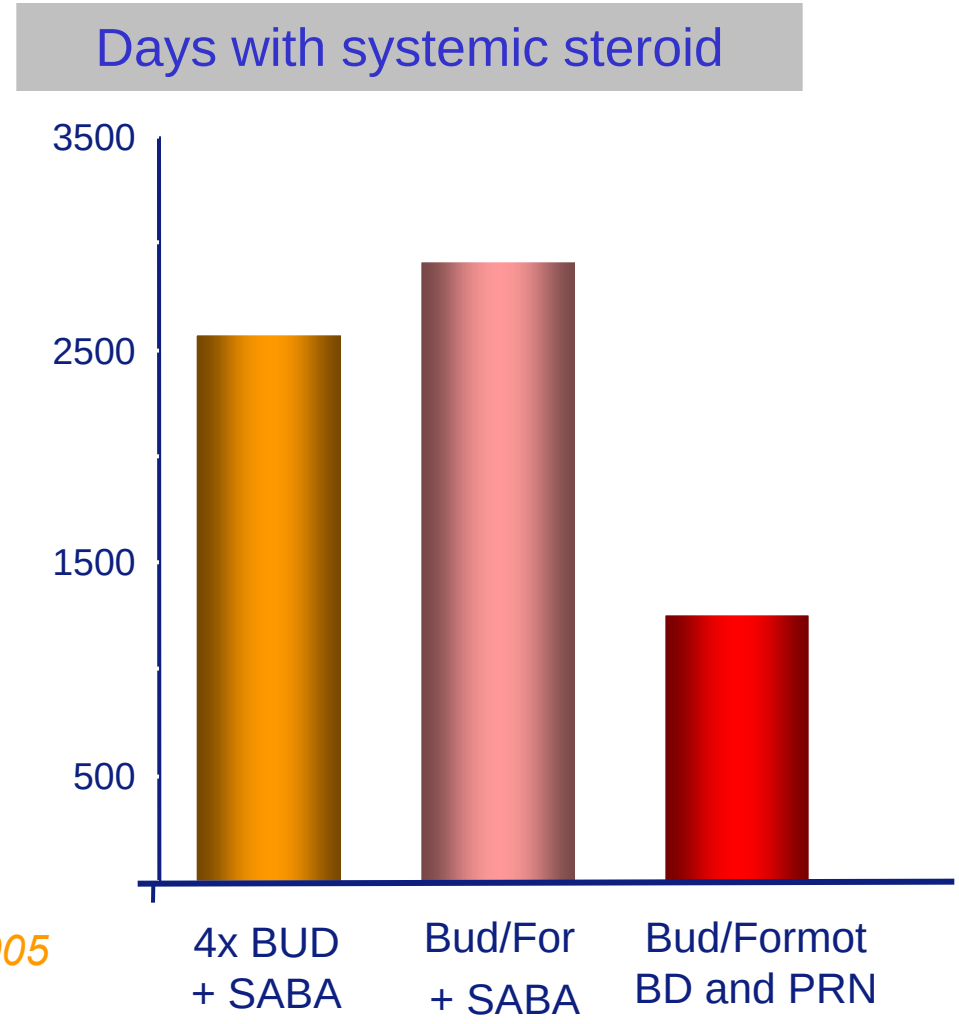
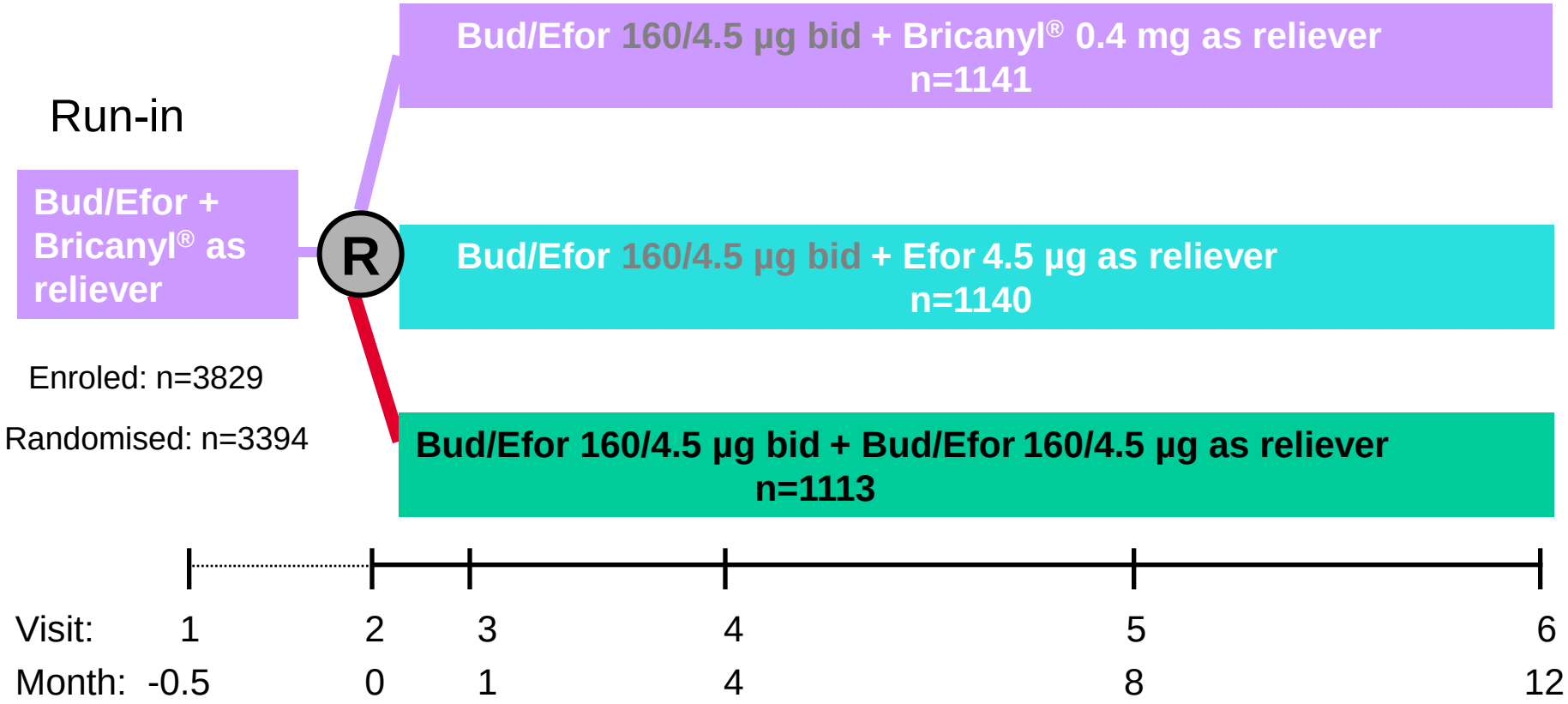
Steroid load during 1 year of treatment



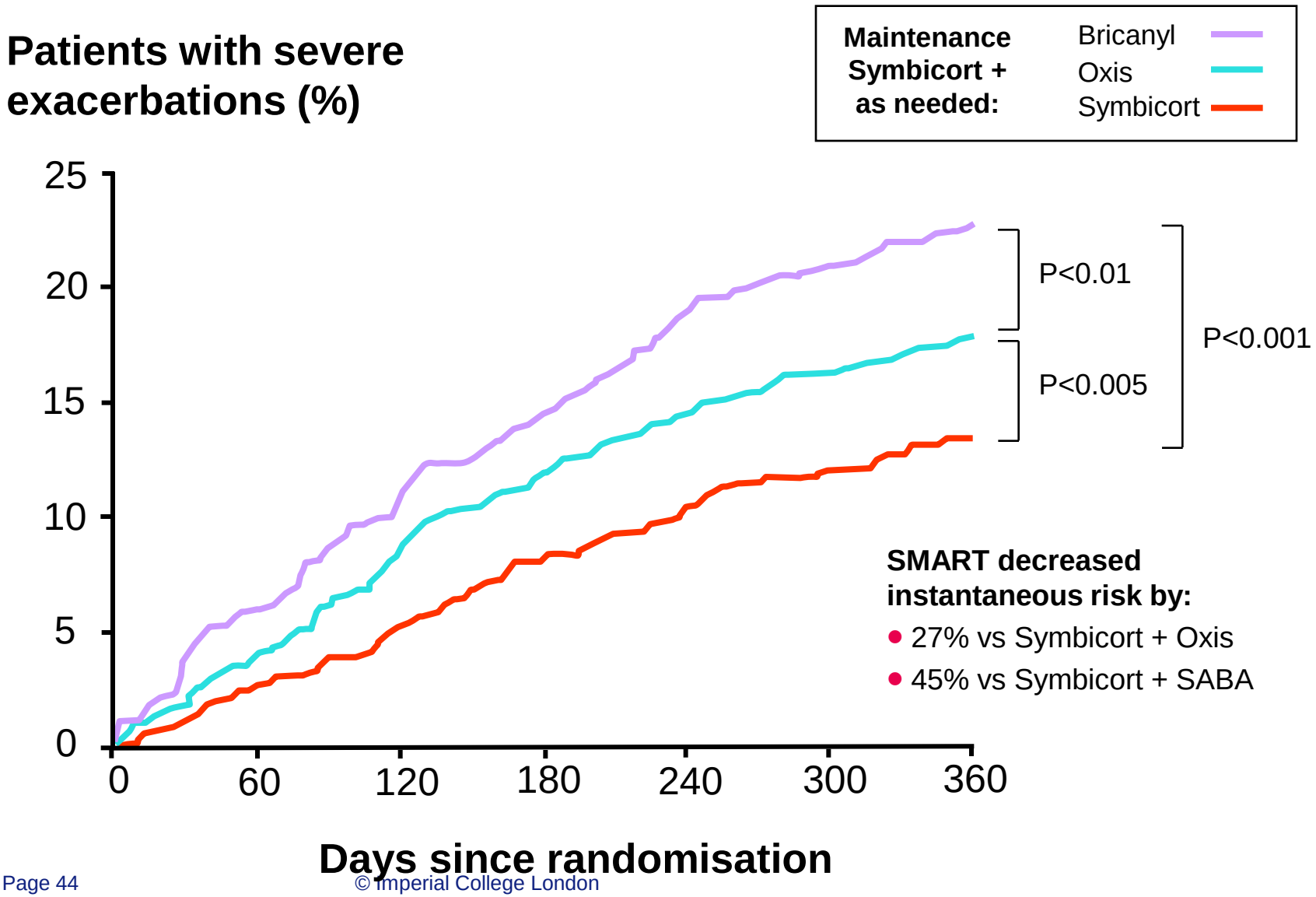
O'Byrne et al., AJRCCM 2005

Is it just a formoterol effect or is the inhaled steroid needed as well?



Rabe K, et al. Lancet 2006; 368:744-53

Time to first severe exacerbation



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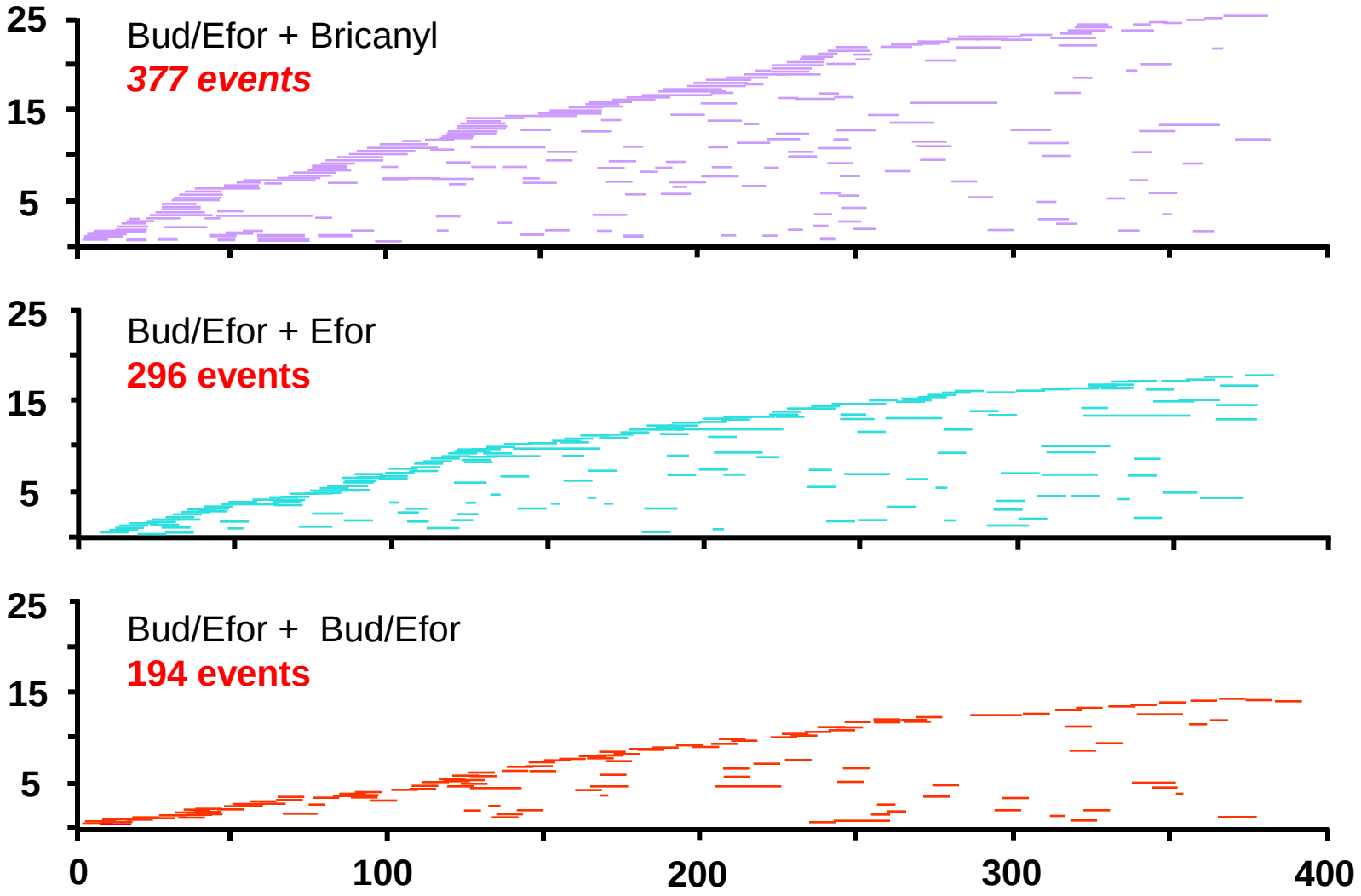
Total severe exacerbations



ICS / Formoterol Combination inhaler as Maintenance and Relief

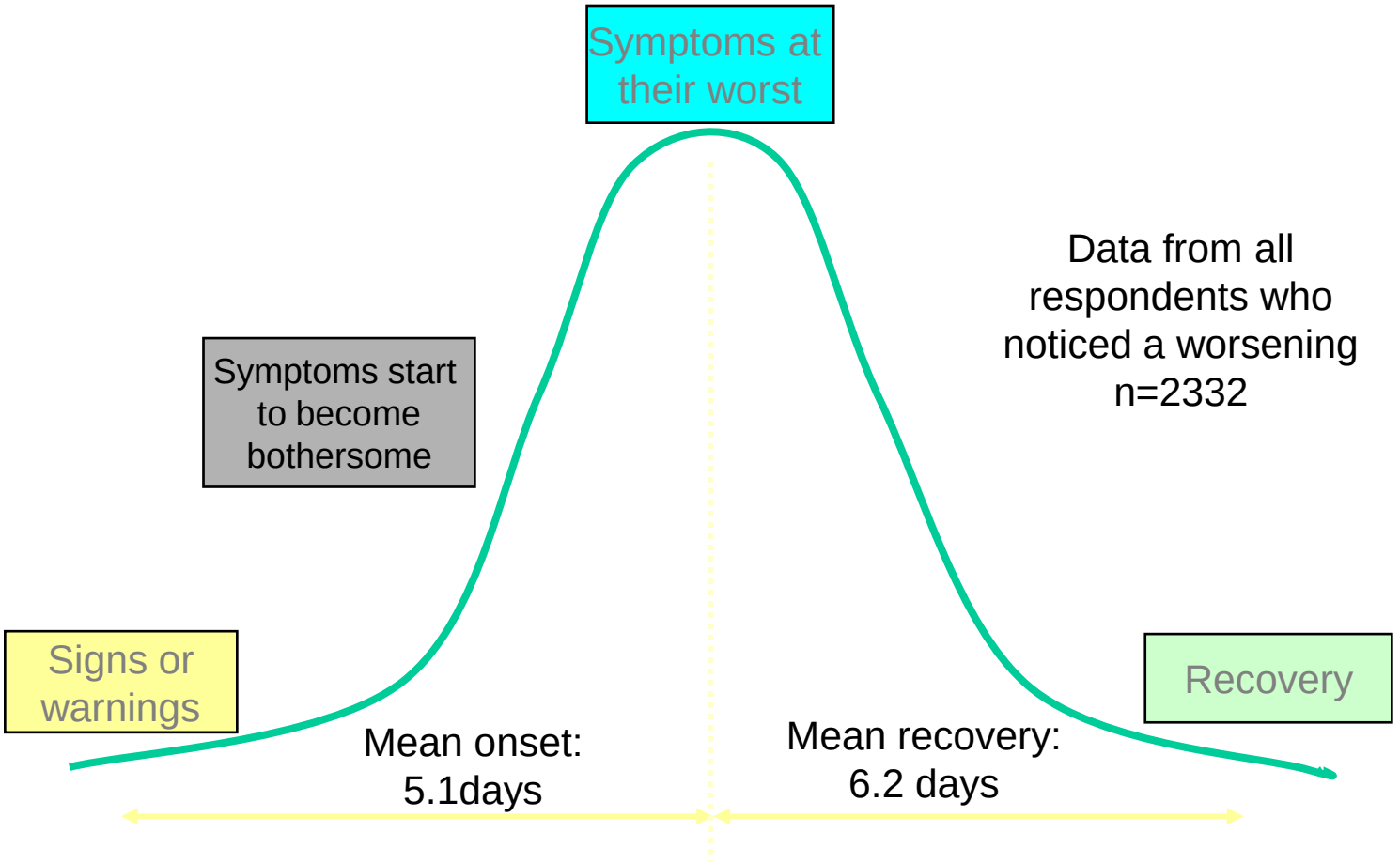
Results in:

- Fewer total and repeat severe exacerbations
- Fewer hospitalisations/ER visits
- Lower systemic corticosteroid use
- Fewer patients with high use of as needed treatment
- Asthma control as good as high dose maintenance

Both an inhaled steroid and eformoterol are needed for the benefit.

How might combination ICS/Formoterol inhalers work “as required” (as well as regularly)?

Time from early warning signs to worst symptoms gives a 6-day window of opportunity



Partridge MR, BMC Pulmonary Medicine 2006

Patients adjust their SABA early and ICS too late at the time of a worsening of symptoms

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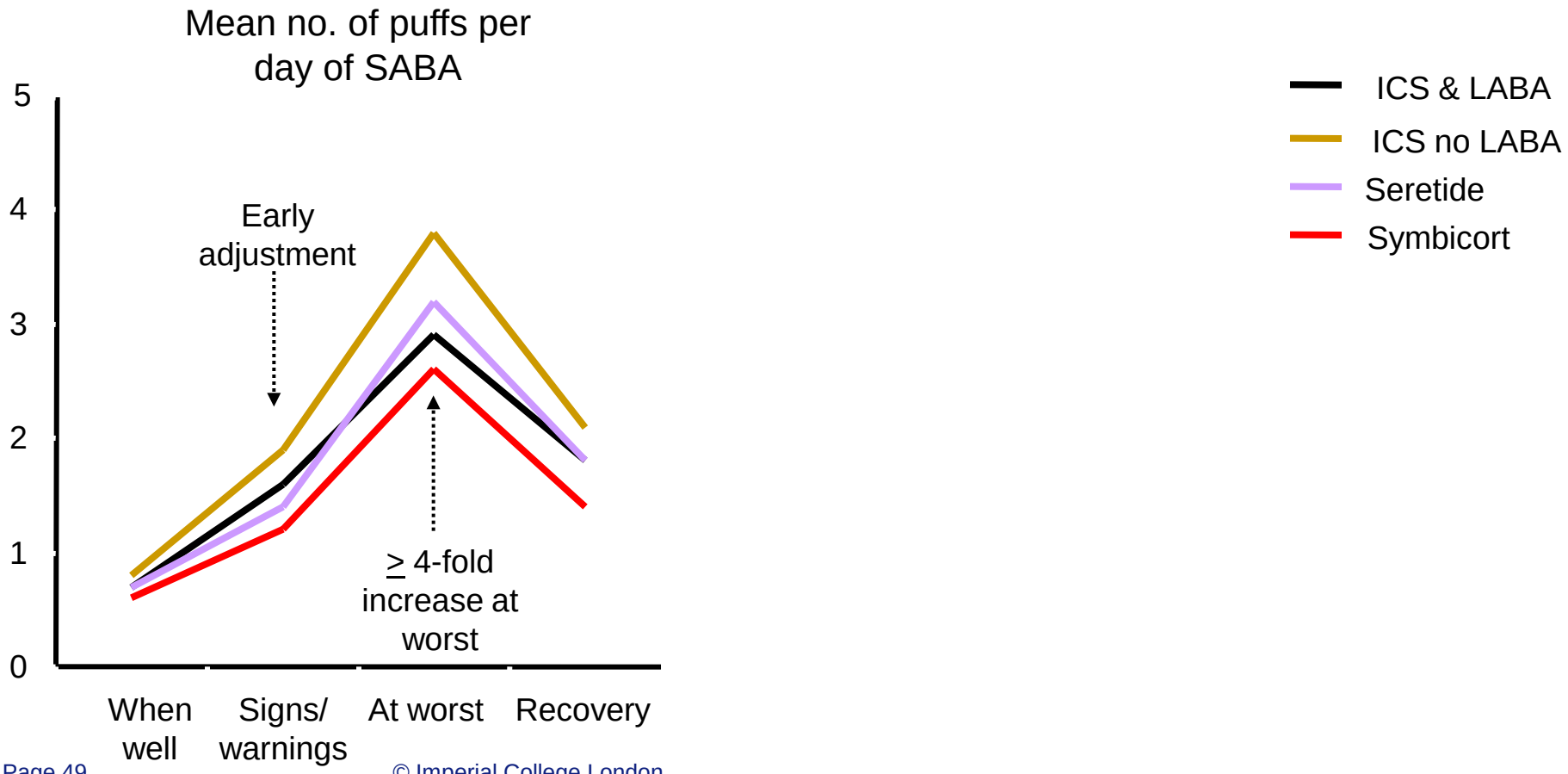

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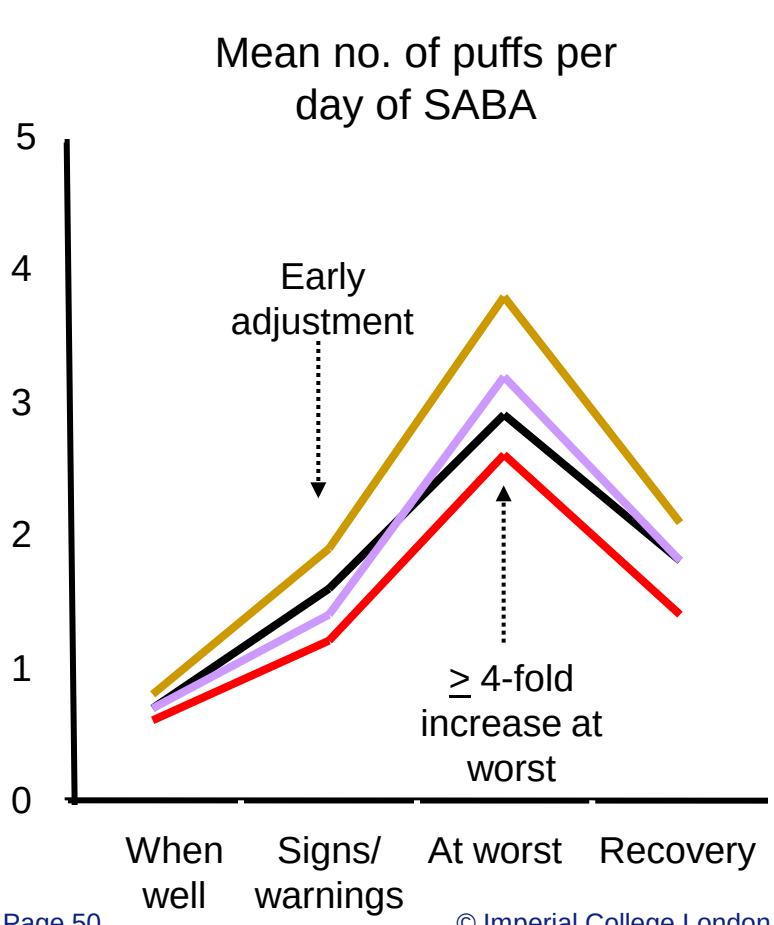
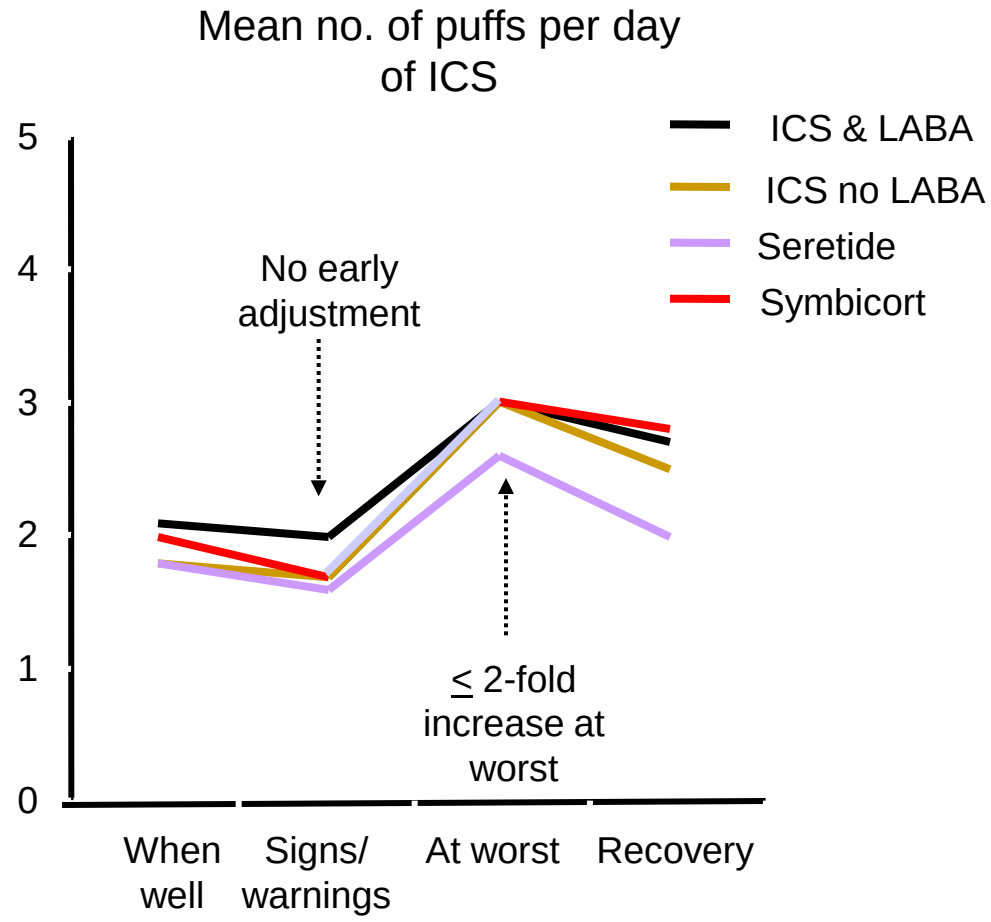
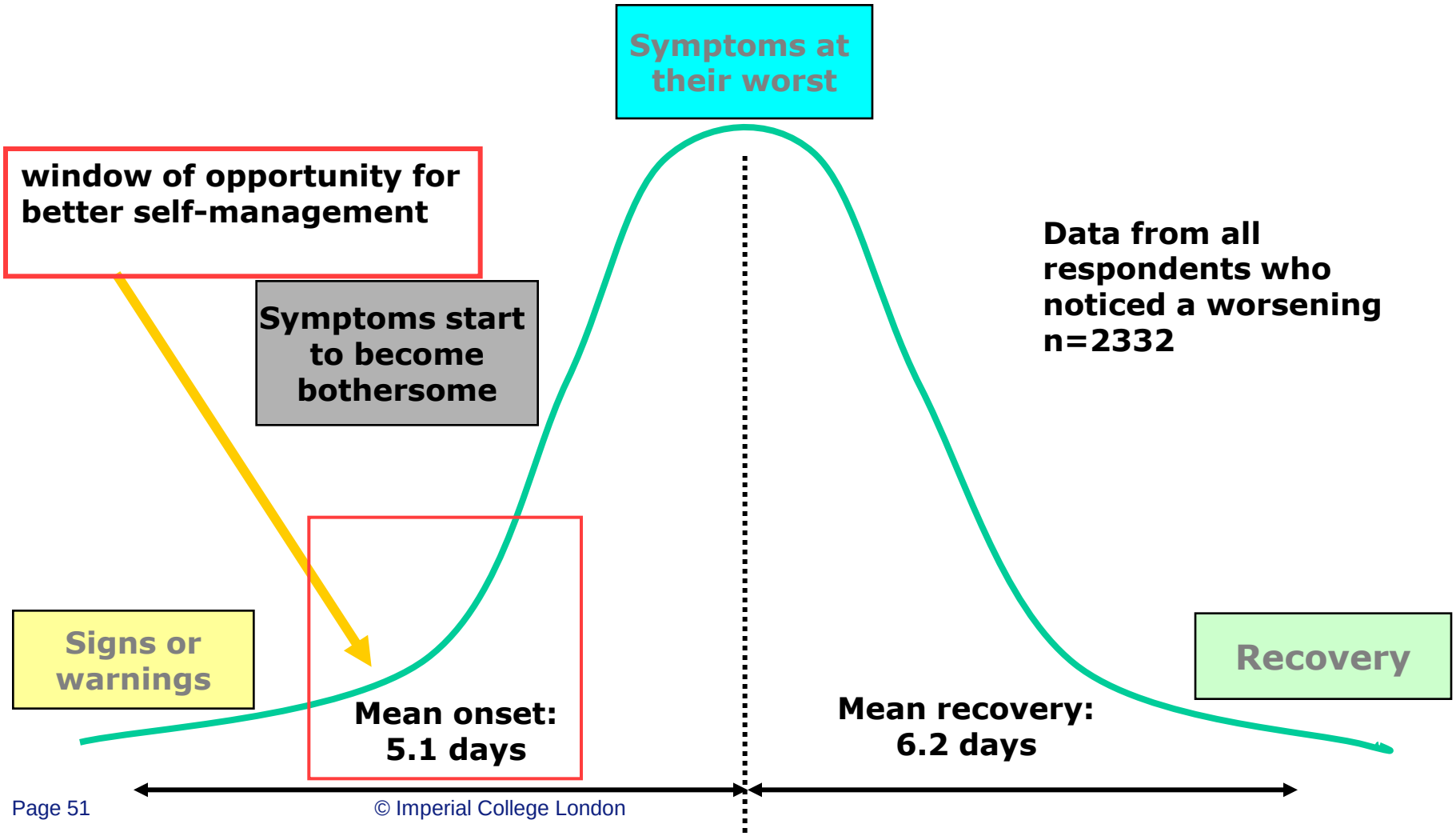




Time from early signs of worsening up to the worst symptoms around 5-days



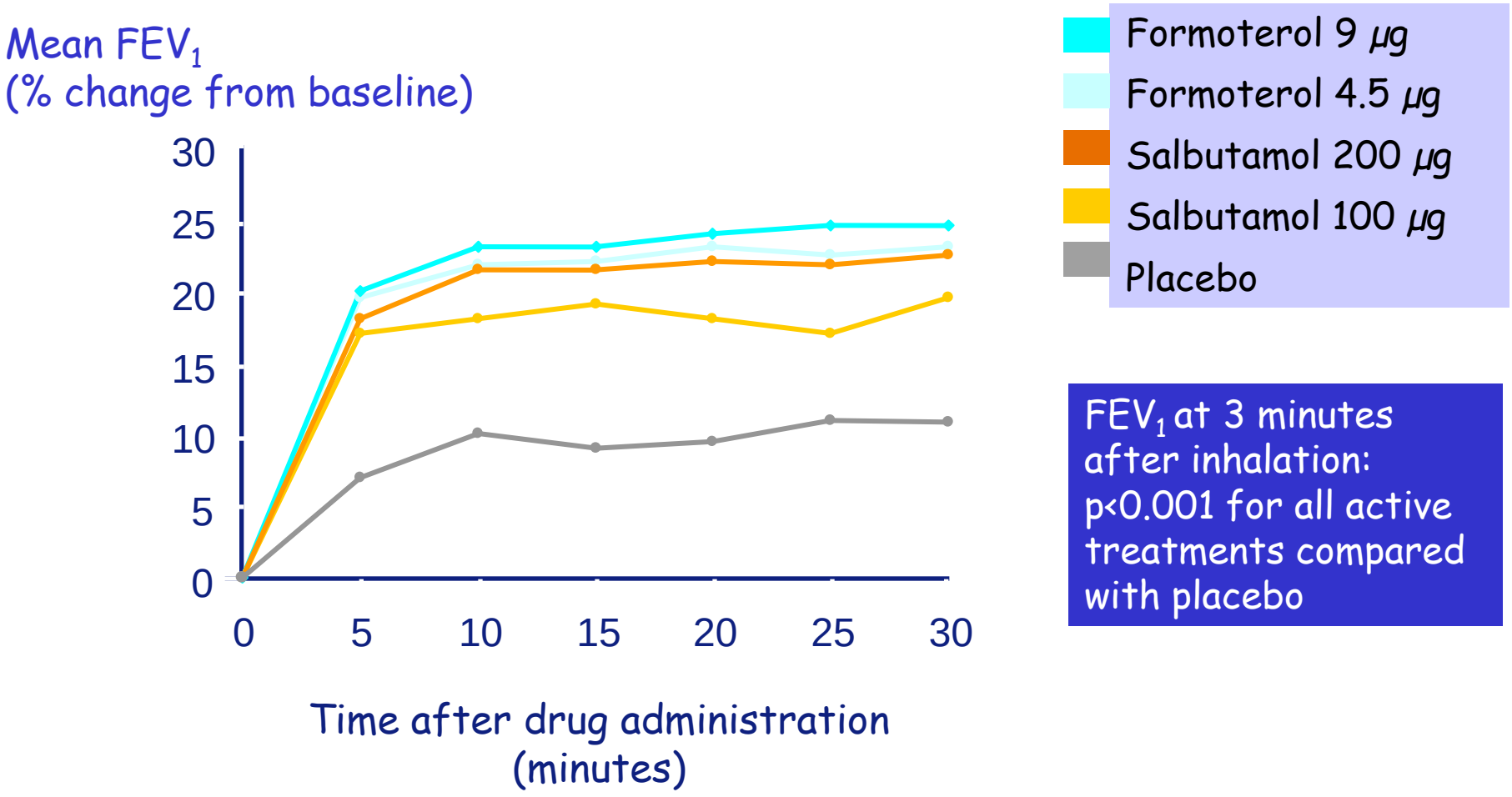
Partridge et al, BMC Pulmonary Medicine, 2006

Important to remember that varying doses applies only to formoterol and not to other LABAs

Formoterol has unique pharmacological properties compared with other long-acting β_2-agonists

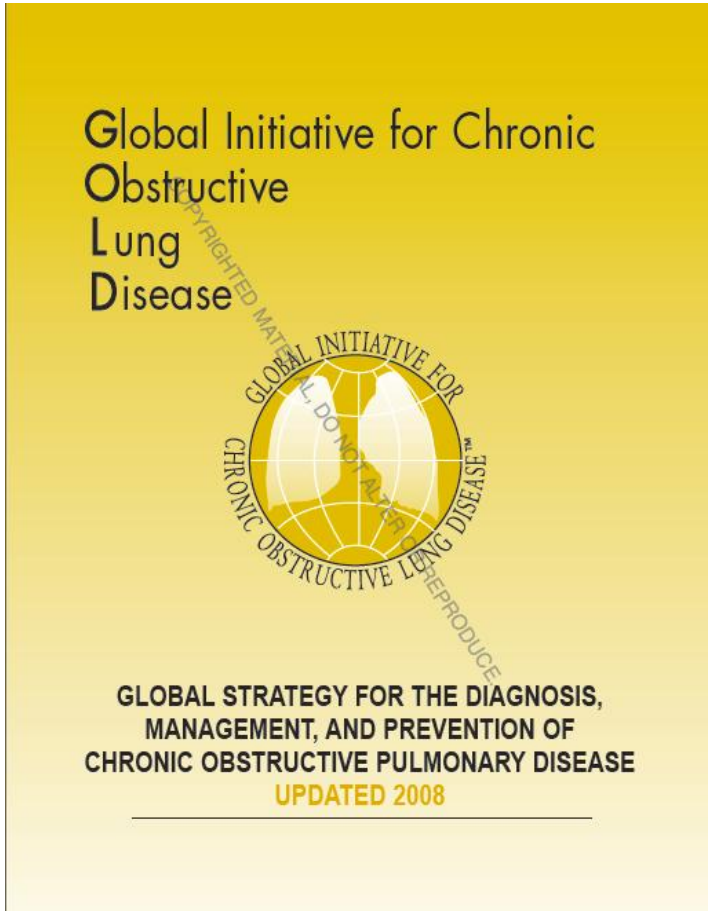
Formoterol	Salmeterol
Long duration (>12 hours)	Long duration (>12 hours)
Rapid onset of action	Delayed onset of action
Full receptor agonist	Partial receptor agonist
Dose–response	No dose–response

Formoterol Has a Rapid Onset of Action Similar to Salbutamol



Seberová E, Andersson A (2000)

Guideline goals for successful COPD management



- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent disease progression
- Prevent and treat complications
- Prevent and treat exacerbations
- Reduce mortality

Guideline goals for successful COPD management

- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent disease progression
- Prevent and treat complications
- Prevent and treat exacerbations
- Reduce mortality

Therapy at Each Stage of COPD

I: Mild	II: Moderate	III: Severe	IV: Very Severe
▪ $FEV_1/FVC < 70\%$ ▪ $FEV_1 \geq 80\%$ predicted	▪ $FEV_1/FVC < 70\%$ ▪ $50\% \leq FEV_1 < 80\%$ predicted	▪ $FEV_1/FVC < 70\%$ ▪ $30\% \leq FEV_1 < 50\%$ predicted	▪ $FEV_1/FVC < 70\%$ ▪ $FEV_1 < 30\%$ predicted *or* $FEV_1 < 50\%$ predicted plus chronic respiratory failure

Active reduction of risk factor(s); influenza vaccination

Add short-acting bronchodilator (when needed)

Add regular treatment with one or more long-acting bronchodilators (when needed); ***Add*** rehabilitation

Add inhaled glucocorticosteroids if repeated exacerbations

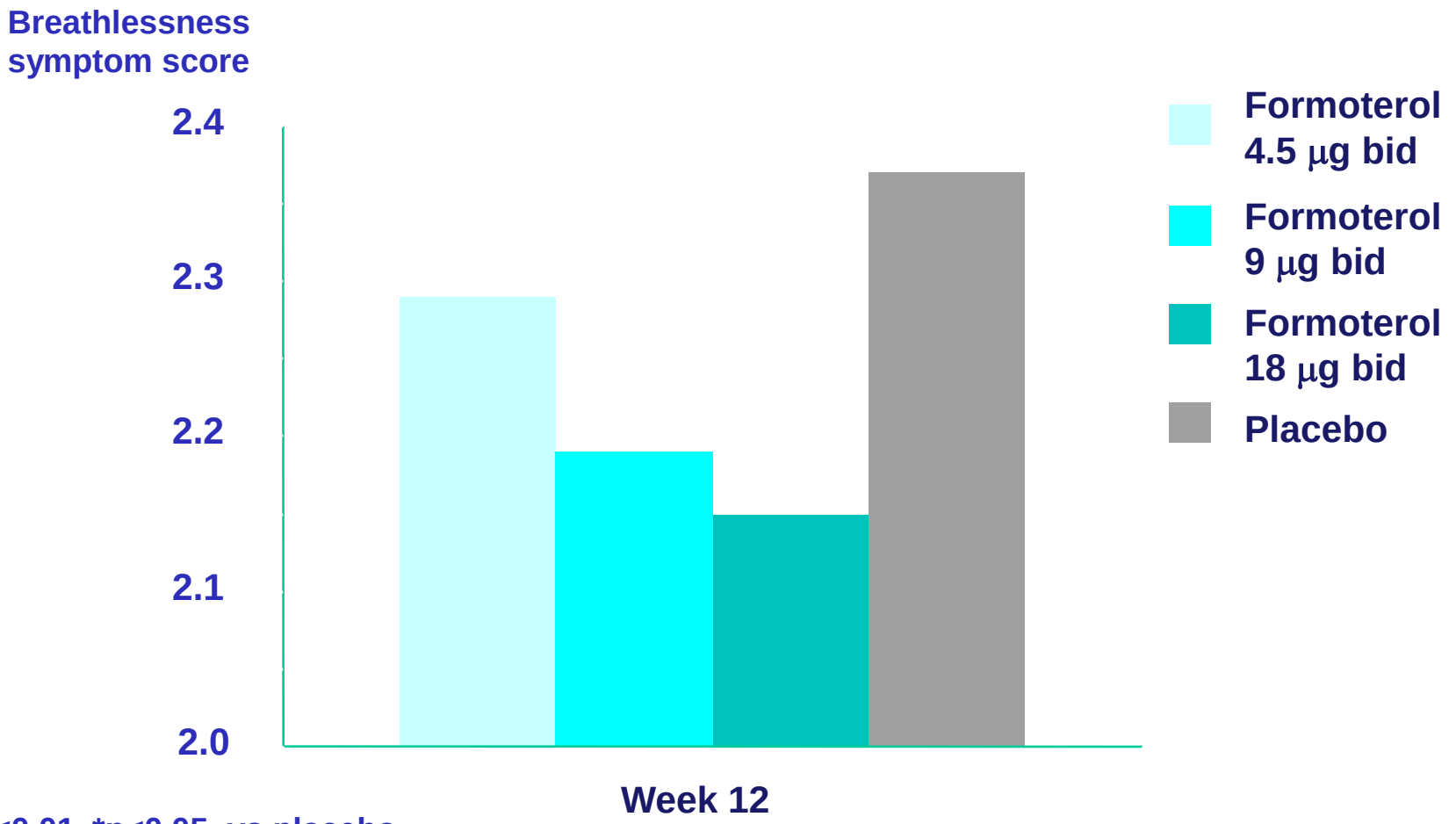
Add long term oxygen if chronic respiratory failure. ***Consider*** surgical treatments

The use of short acting inhaled bronchodilators

- GOLD recommends for moderate to very severe COPD, use of regular long acting inhaled bronchodilators (formoterol, salmeterol and tiotropium), rather than short acting bronchodilators.

- Evidence Level A

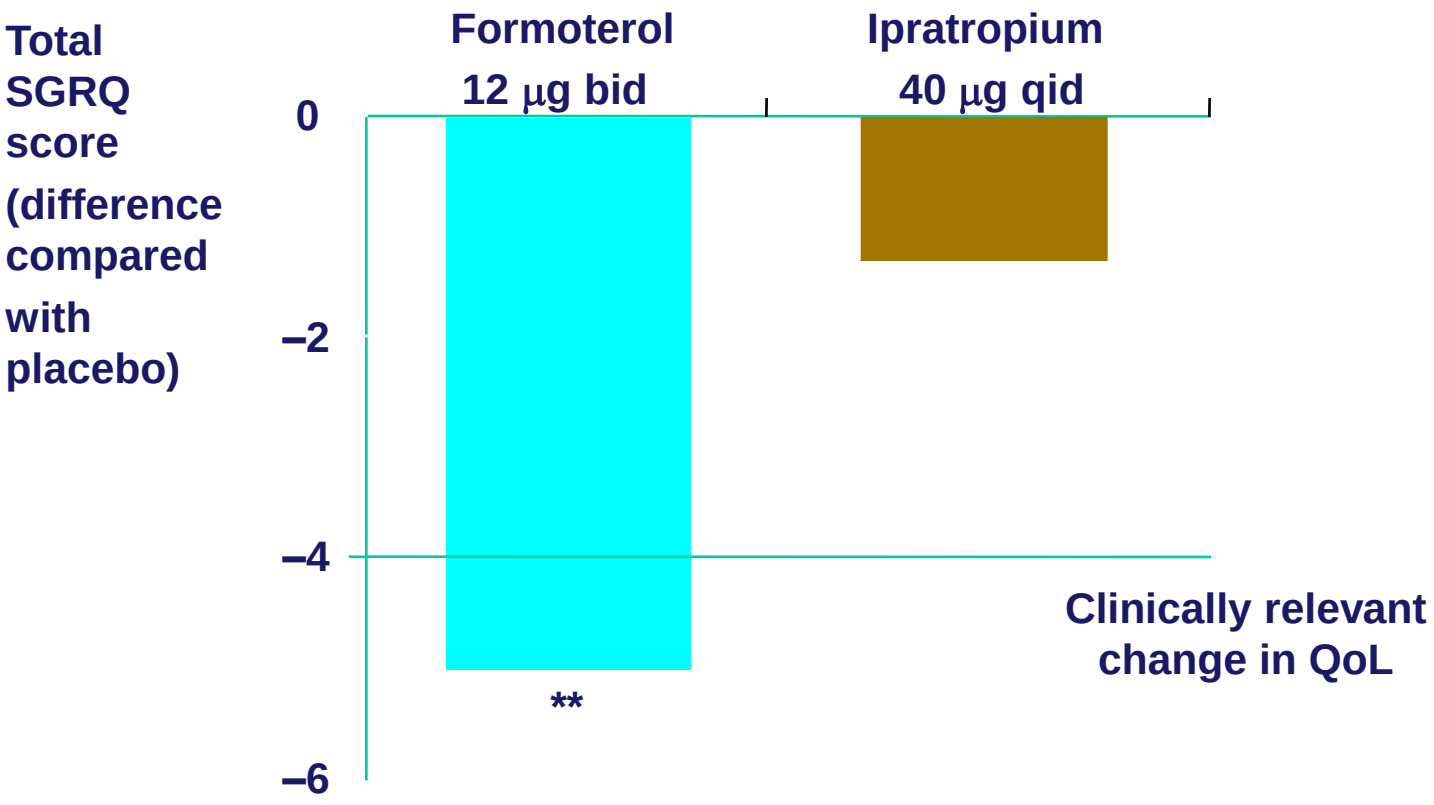
Formoterol significantly reduces breathlessness in COPD



**p<0.01, *p<0.05; vs placebo

Adapted from Aalbers et al 2002

Formoterol improves quality of life significantly compared with ipratropium



**p<0.005 vs ipratropium, p<0.001 vs placebo

Adapted from Dahl et al 2000

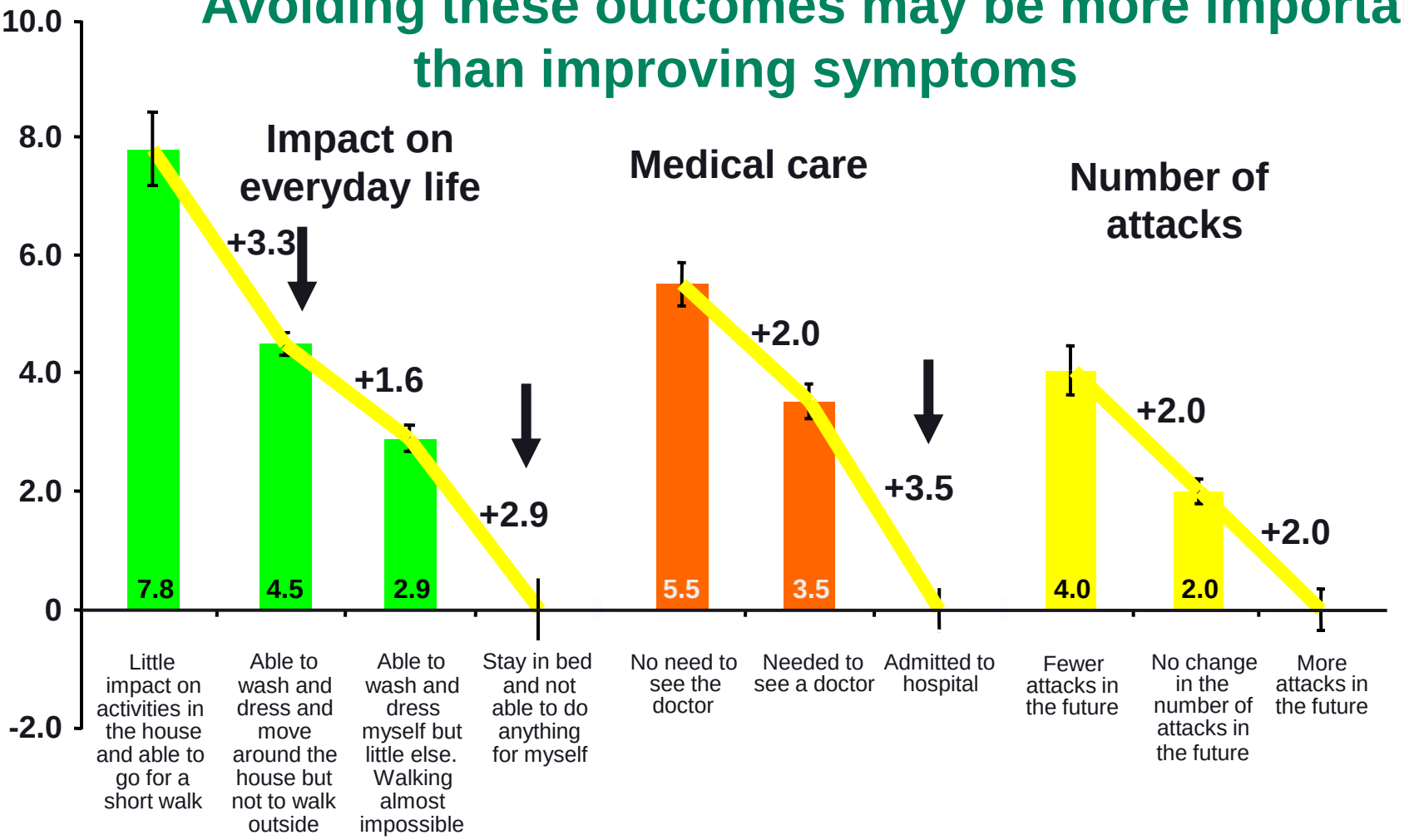
What aspect of their condition do those with COPD most fear?

Discrete choice modelling: Utility shifts

COPD patients are re most concerned about being

hospitalised – housebound – bedridden

Avoiding these outcomes may be more important than improving symptoms



Haughney J, Partridge MR, Vogelmeier C, Larsson T, Kessler R. et al Eur Respir J 2005; 26:623-9

COPD exacerbations worsen long-term prognosis

- Lung function declines faster in patients with frequent versus infrequent exacerbations

Measure	Infrequent (<2.92/year)[a]	Frequent (>2.92/year)[a]	p-value
No. of patients	63	46	
PEF decline, L/min/year	-0.72	-2.94	<0.001
FEV_1 decline, mL/year	-32.1	-40.1	<0.05

FEV_1 = forced expiratory volume in 1 second

Donaldson GC, et al. Thorax 2002;57:847–852

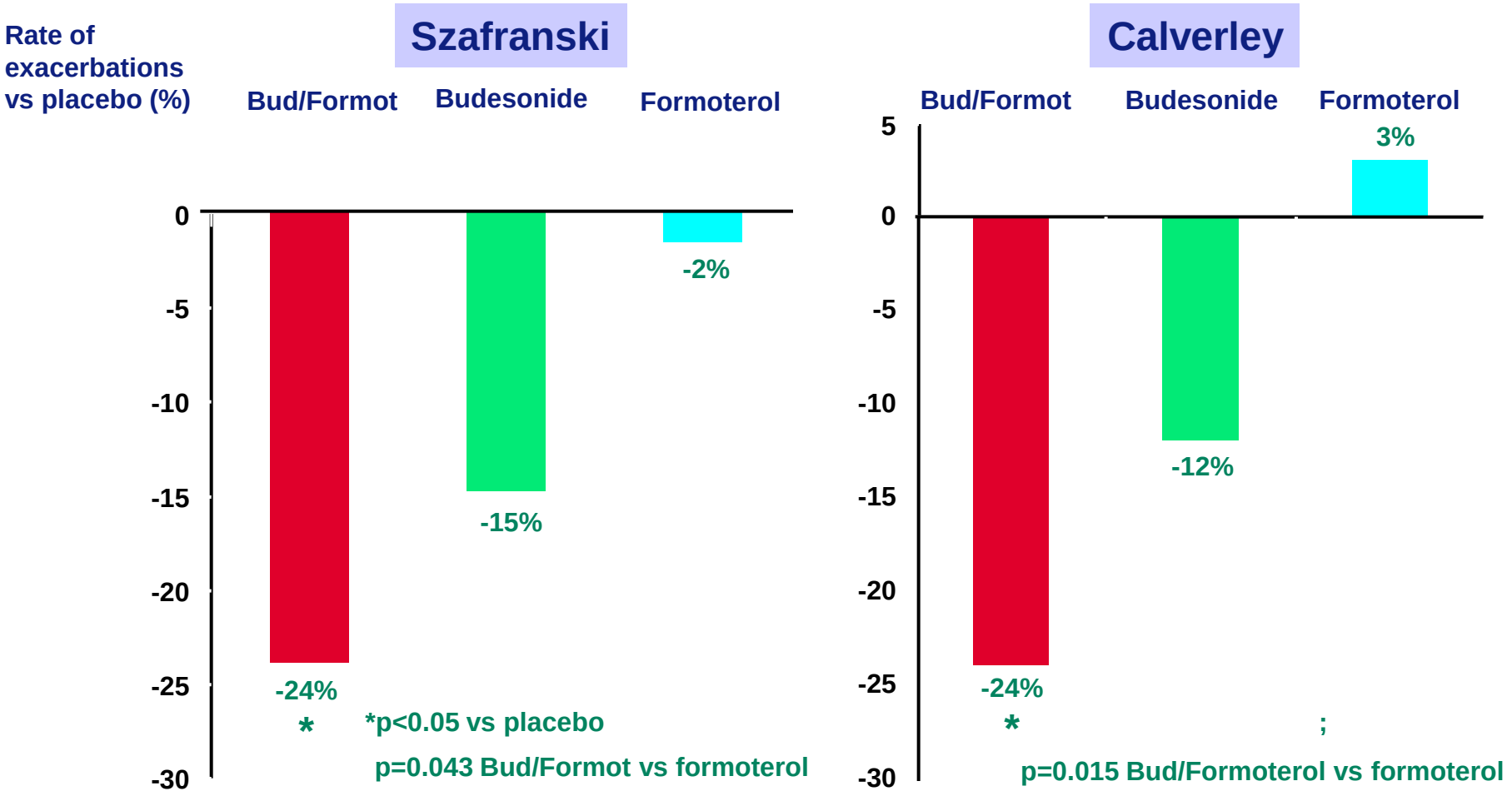
Cost of exacerbations

- 54% of the economic cost of COPD accrues from hospitalisation

Britton M Respir Med 2003; 97: s71-S79

So from a patient viewpoint, from a prognosis viewpoint and from a Government viewpoint, exacerbations are an important issue to address

ICS/Formoterol combinations reduce the rate of exacerbations requiring medical intervention



Szafranski W, et al. Eur Respir J 2003;21:74–81

Calverley PM, et al. Eur Respir J 2003; 22: 912-919

Efficacy and Tolerability of Budesonide/Formoterol Added to Tiotropium in Patients with Chronic Obstructive Pulmonary Disease

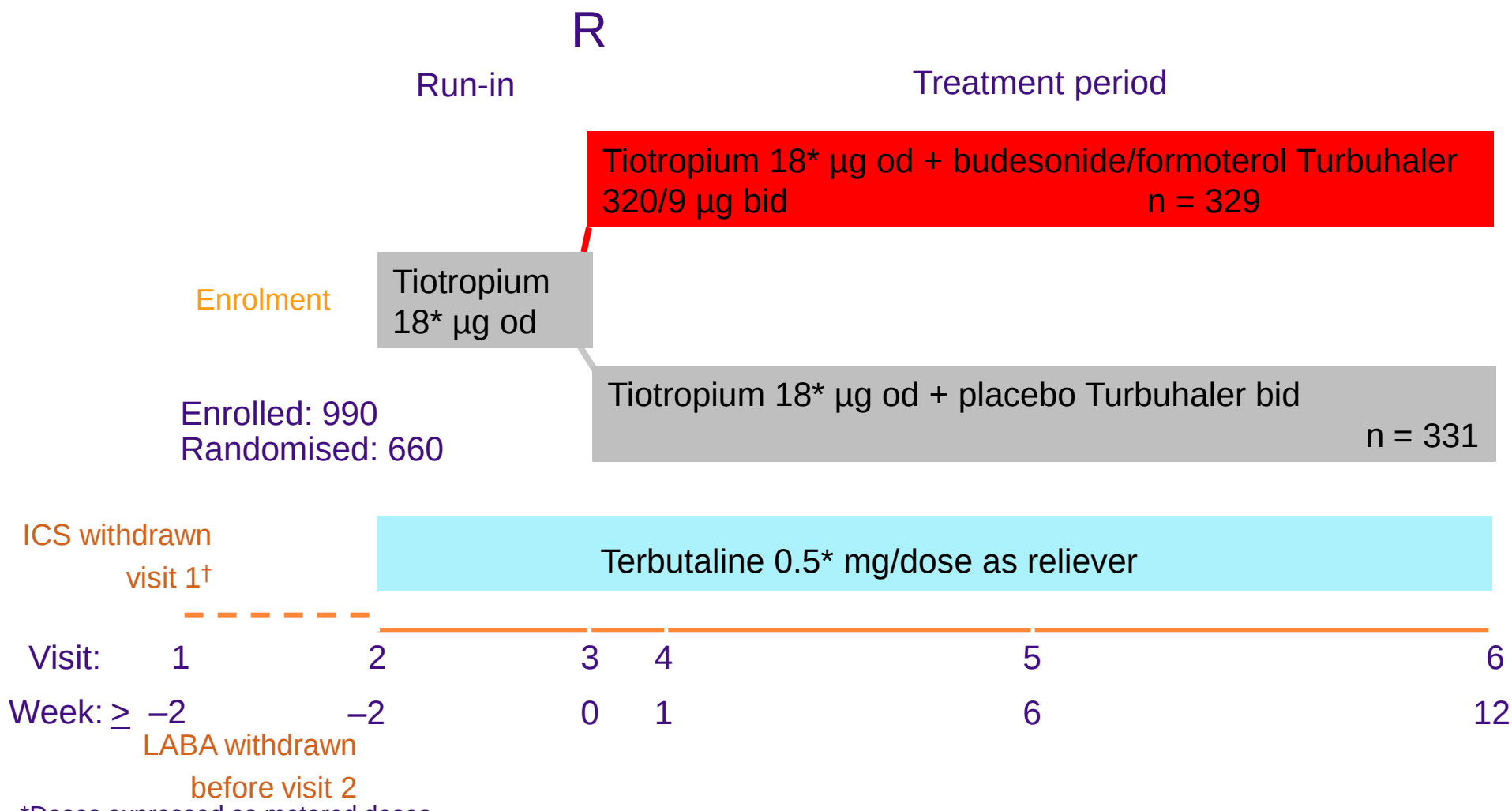
Tobias Welte[1], Marc Miravitlles[2], Paul Hernandez[3], Göran Eriksson[4,5], Stefan Peterson[5], Tomasz Polanowski[5], and Romain Kessler[6]

[1]Department of Respiratory Medicine, Hannover Medical School, Germany; [2]Fundació Clínic, Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona, Spain; [3]Respirology Division, Department of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada; [4]Department of Respiratory Medicine and Allergology, University Hospital, Lund, Sweden; [5]AstraZeneca Research and Development, Lund, Sweden; and [6]Department of Pneumology, Hôpitaux Universitaires de Strasbourg, Strasbourg, France

Welte T et al. AJRCCM 2009; doi:10.1164/rccm.200904-0492OC.

CLIMB: study design

3-month, double-blind, randomised study

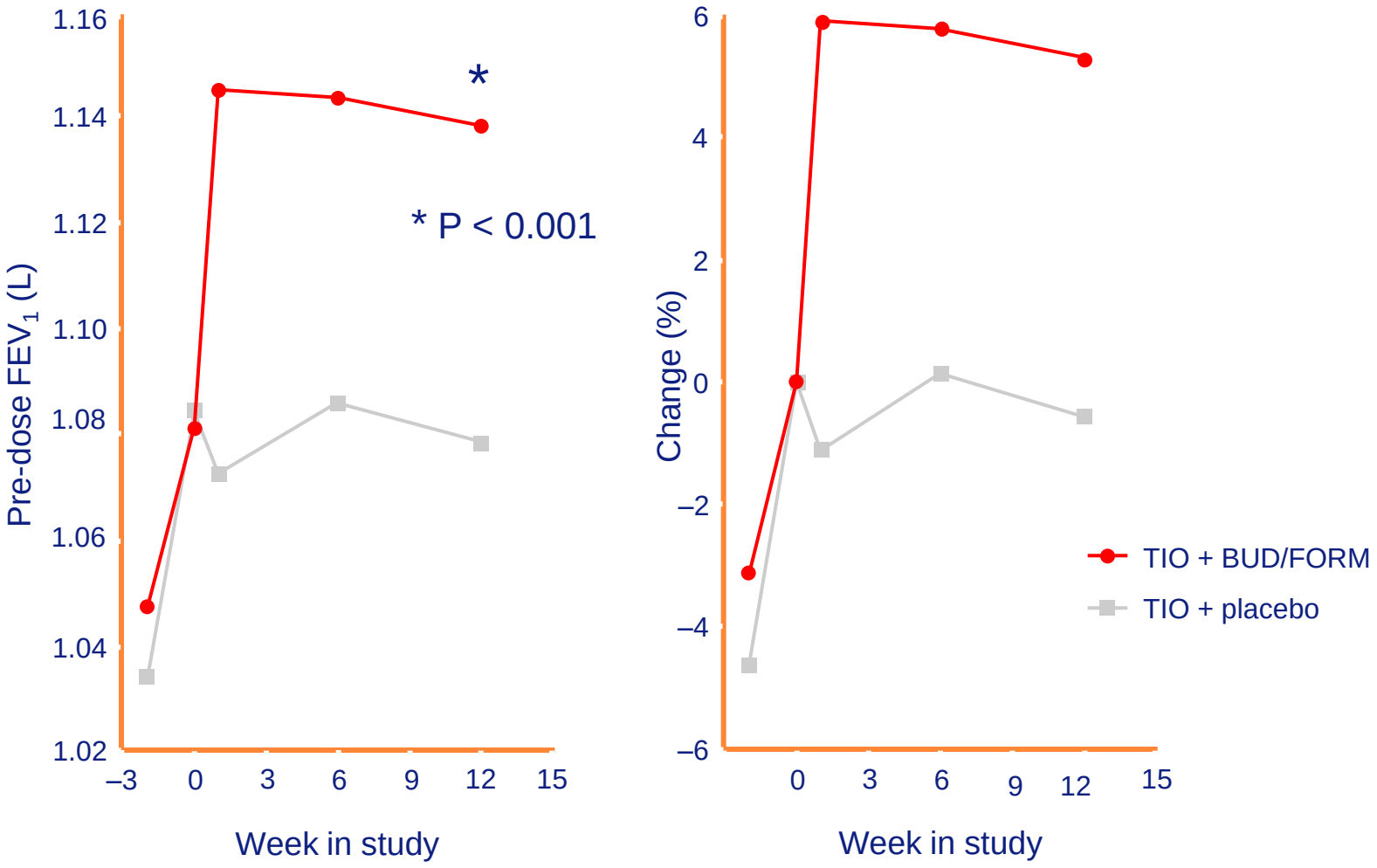


*Doses expressed as metered doses

†Oral and parenteral steroids not used ≥ 4 weeks before randomisation

Welte T et al. AJRCCM 2009; doi:10.1164/rccm.200904-0492OC

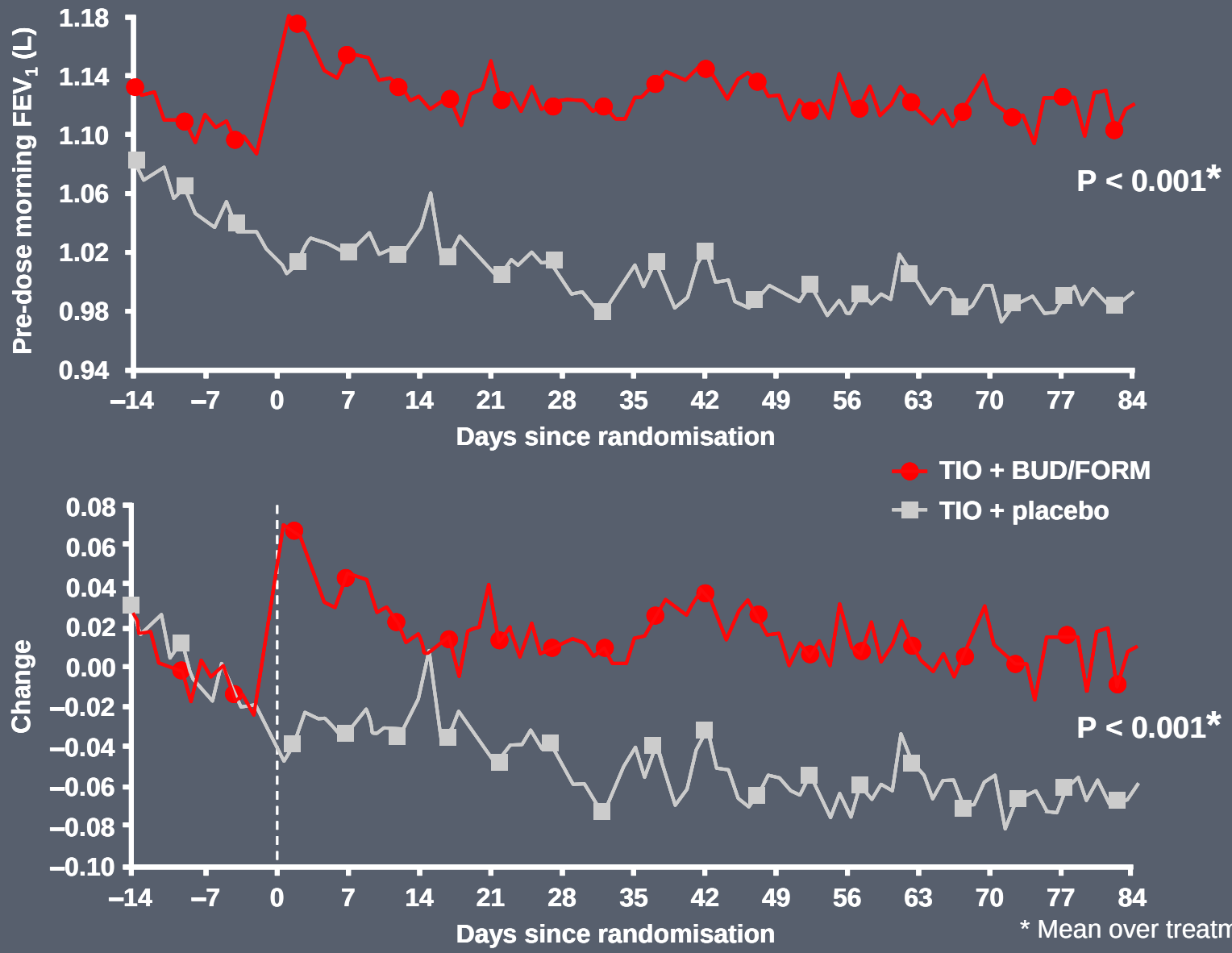
TIO + BUD/FORM improves change in ratio of pre-dose FEV_1 compared with TIO + placebo



BUD/FORM = budesonide/formoterol; TIO = tiotropium

Welte T et al. AJRCCM 2009; doi:10.1164/rccm.200904-0492OC

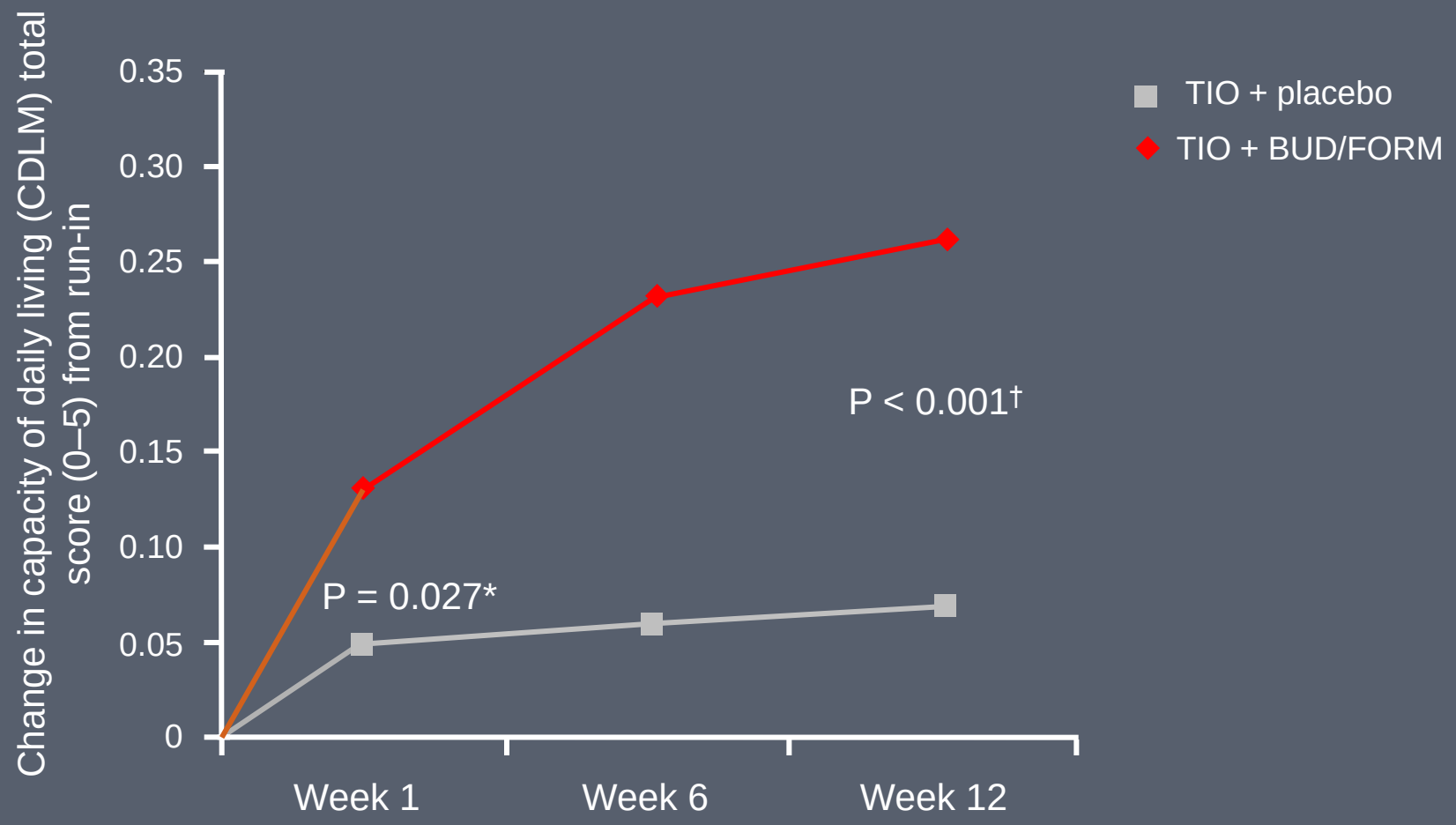
Morning FEV_1 at bedside



BUD/FORM = budesonide/formoterol; TIO = tiotropium

Welte T et al. AJRCCM 2009; doi:10.1164/rccm.200904-0492OC.

TIO + BUD/FORM improves change in total morning activities score



* Treatment comparison from randomisation to first week of treatment

† Treatment comparison from randomisation to last week of treatment

BUD/FORM = budesonide/formoterol; TIO = tiotropium

Welte T et al. AJRCCM 2009; doi:10.1164/rccm.200904-0492OC.

Thinking beyond the prescription

Let us begin with those with COPD

The patient pathway

Prompt Diagnosis

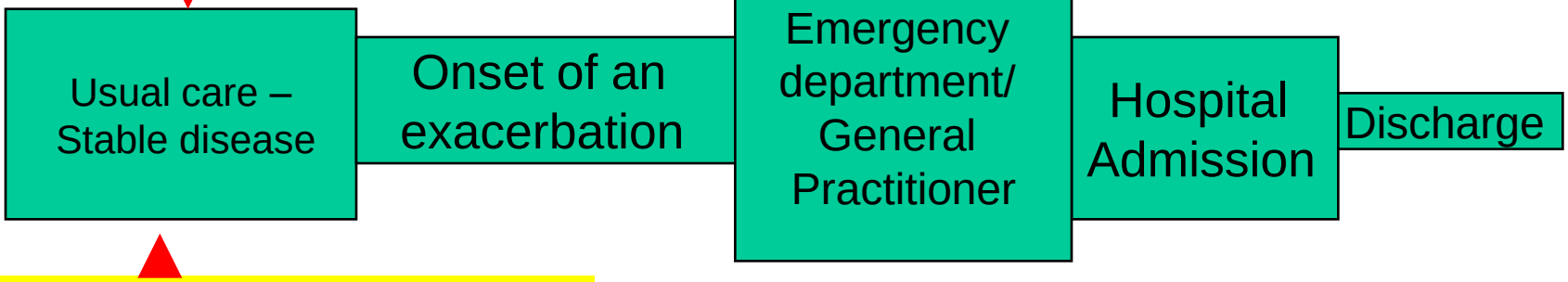
Optimisation of therapy

Oxygen

Vaccinations

Pulmonary Rehab

Easy access to knowledgeable HCP



Self Management Education

Reserve supplies of antibiotics and steroids

Case Registers

Pulmonary Rehabilitation

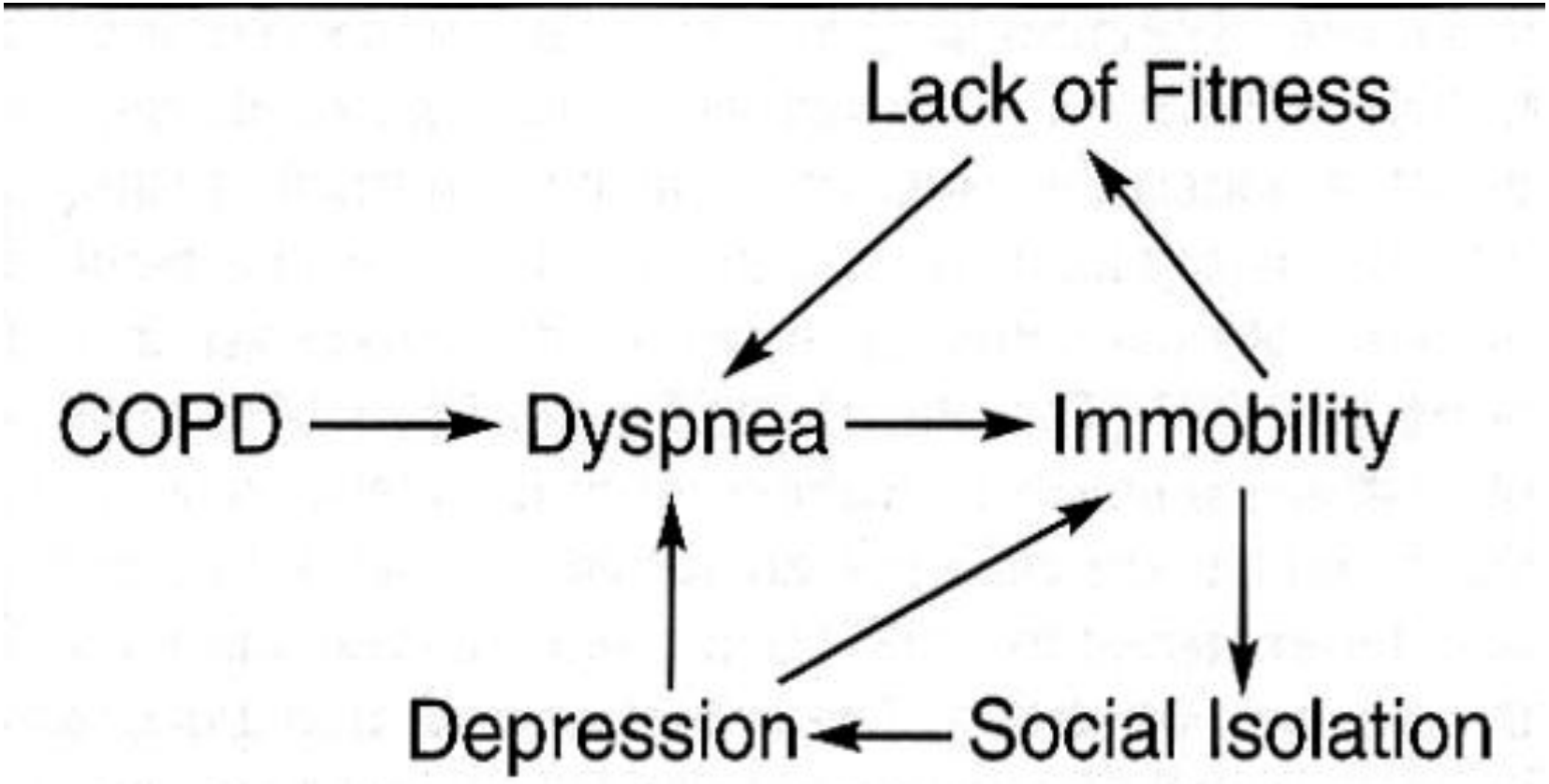
Consists of:

1. Exercise training
2. Nutrition counselling
3. Education,

And there is grade A evidence that it:

- Improves exercise capacity
- Reduces perceived intensity of breathlessness
- Reduces number of hospitalisations and length of stay
- Reduces the anxiety and depression associated with COPD

The cycle of Physical, Social, and Psychosocial Consequences of COPD



LONG TERM DOMICILIARY OXYGEN THERAPY IN CHRONIC HYPOXIC COR PULMONALE COMPLICATING CHRONIC BRONCHITIS AND EMPHYSEMA

Report of the Medical Research Council Working Party*

Summary A controlled trial of long term domiciliary oxygen therapy has been carried out in three centres in the U.K. The 87 patients, all under 70 years of age, who took part had chronic bronchitis or emphysema with irreversible airways obstruction, severe arterial hypoxaemia, carbon dioxide retention, and a history of congestive heart failure. The patients were randomised to oxygen therapy (treated) or no oxygen (controls). Oxygen was given by nasal prongs for at least 15 h daily, usually at 2 l/min. The two groups were well matched, both clinically and in terms of lung function and other laboratory findings. 19 of the 42 oxygen treated patients died in the five years of survival follow-up compared with 30 out of 45 controls: in the 66 men in this trial the survival advantage of oxygen did not emerge until 500 days had elapsed. Survival for the 12 female controls was surprisingly poor, 8 of them being dead at 3 years. Mortality was not easy to predict, though a summation of arterial carbon dioxide tension and red cell mass was helpful. Neither time spent in hospital because of exacerbations of respiratory failure nor work attendance were affected by oxygen therapy, but these patients were very ill at the start of the trial and many had already retired on grounds of age or ill-health. Physiological measurements suggested that oxygen did not slow the progress of respiratory failure in those who died early. However, in longer term survivors on oxygen, arterial oxygenation did seem to stop deterioration.

Introduction

THE prognosis for patients in whom chronic bronchitis and emphysema is complicated by hypoxic cor pulmonale and carbon dioxide retention is grave, the three year mortality rate varying from 32 to 100%.[1-8] Correction of this hypoxaemia over a long period by domiciliary oxygen therapy reduces pulmonary hypertension[9-14] and secondary polycythaemia[9-14] in these patients, but the value of this treatment has not so far been assessed by a controlled clinical trial. In 1973 the Medical Research Council set up in the U.K. a multicentre controlled trial of long term oxygen therapy in such patients in Birmingham, Edinburgh, and Sheffield. This trial was planned to determine if oxygen, given for 15 h in a day, over a three year period, could reduce mortality and improve exercise tolerance and working capacity. Changes in the physiological variables were also to be studied.

Patients and Methods

Patients

Men or women under 70 years of age were asked to participate if they had chronic bronchitis or emphysema with irreversible airways obstruction (forced expiratory volume in one second [$FEV_{1.0}$]<1·2 litres) and an arterial oxygen tension (PaO_2) between 40 and 60 mm Hg when breathing air at rest. The mean pulmonary arterial pressure was recorded, but it was decided that resting pulmonary arterial hypertension should not be a criterion for entry into the study. Patients were admitted if they had one or more recorded episodes of heart failure with ankle oedema; arterial blood gas, FEV_1, and body weight measurements had to be stable in two repeated measurements at least 3 weeks apart. Patients with fibrotic or infiltrative lung disease, pneumoconiosis (category 2 or more), severe kyphoscoliosis, overt episodes of pulmonary embolism, systemic hypertension (diastolic pressure >100 mm Hg under 60 years of age or >110 mm Hg over 65 years of age), proven coronary arterial disease, or other life threatening diseases were excluded.

Patients who agreed to participate in the trial after careful explanation were then allocated to the treatment or control group by means of a table of random numbers, so that within each centre successive groups of 8 patients contained 4 treated patients and 4 controls. Clinical, physiological, and therapeutic details of the 87 patients at entry to the trial are summarised in tables I and II, which show that they had severe persistent airways obstruction, hypoxaemia, CO_2 retention, compensated respiratory acidosis, secondary polycythaemia, and pulmonary hypertension.

Procedure

Treatment other than oxygen was given according to the discretion of the clinician in charge of the patient, and included diuretics, digoxin, and antibiotics (table II). All patients were urged to give up smoking. All patients were seen at a clinic every 2 months throughout the trial, being admitted to hospital for other treatment as necessary, at the discretion of their clinician. The patients were otherwise at home, but visited from time to time by research registrars or technicians attached to the trial to check oxygen usage and, occasionally, to sample arterial blood at home.

*Professor Sir CHARLES STUART-HARRIS (chairman), Prof. J. M. BISHOP, Prof. T. J. H. CLARK, Prof. A. C. DORNHORST, Dr J. E. COTES, Prof. D. C. FLENLEY, Dr P. HOWARD, and Dr P. D. OLDHAM.

Report prepared by Sir CHARLES STUART-HARRIS, Professor FLENLEY, Professor BISHOP, Dr HOWARD, and Dr OLDHAM, with assistance from Dr P. M. A. CALVERLEY. The assistance of the following research fellows is gratefully acknowledged: Dr S. R. Brennan, Dr Calverley, Dr R. M. Jones, Dr R. G. E. Leggett, Dr M. D. Peake, Dr R. A. Stockley, Dr N. F. C. Cain.

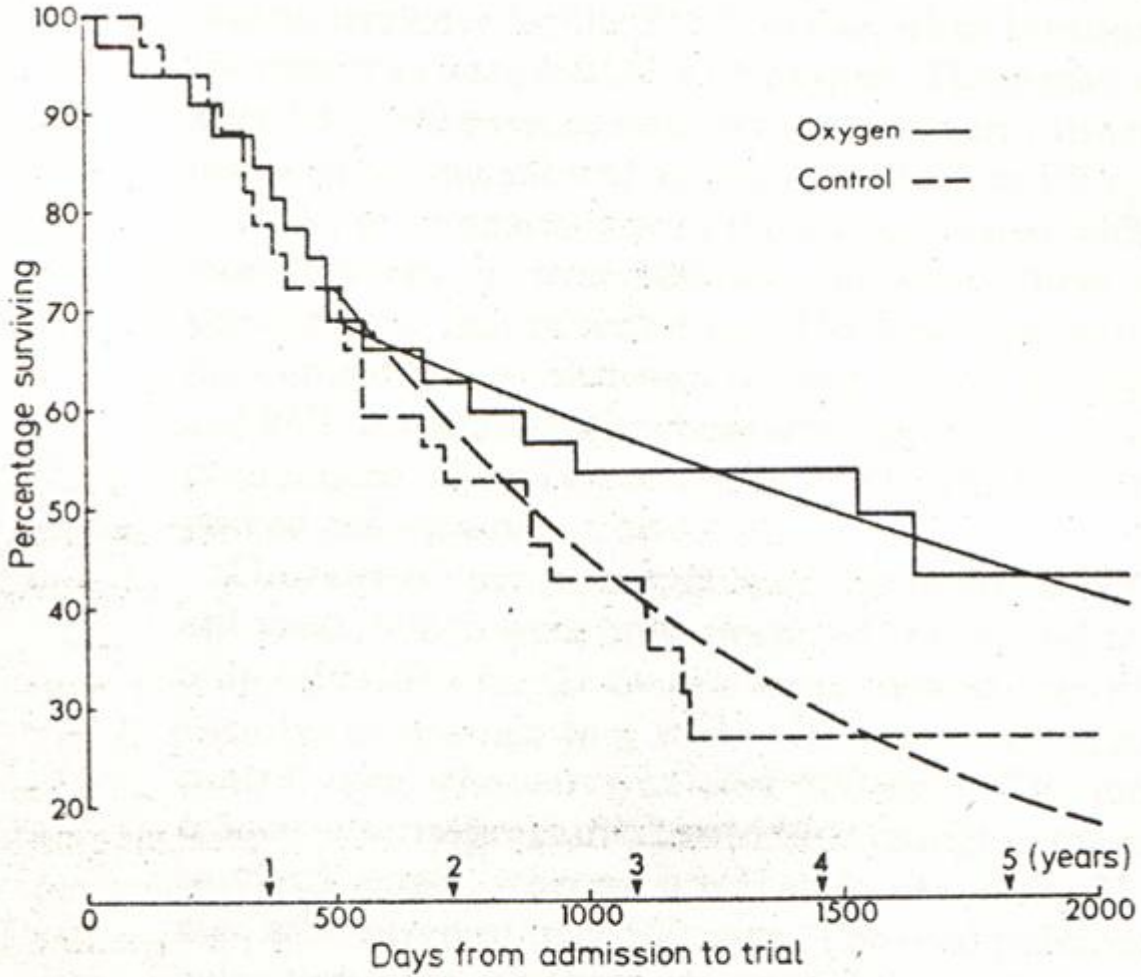
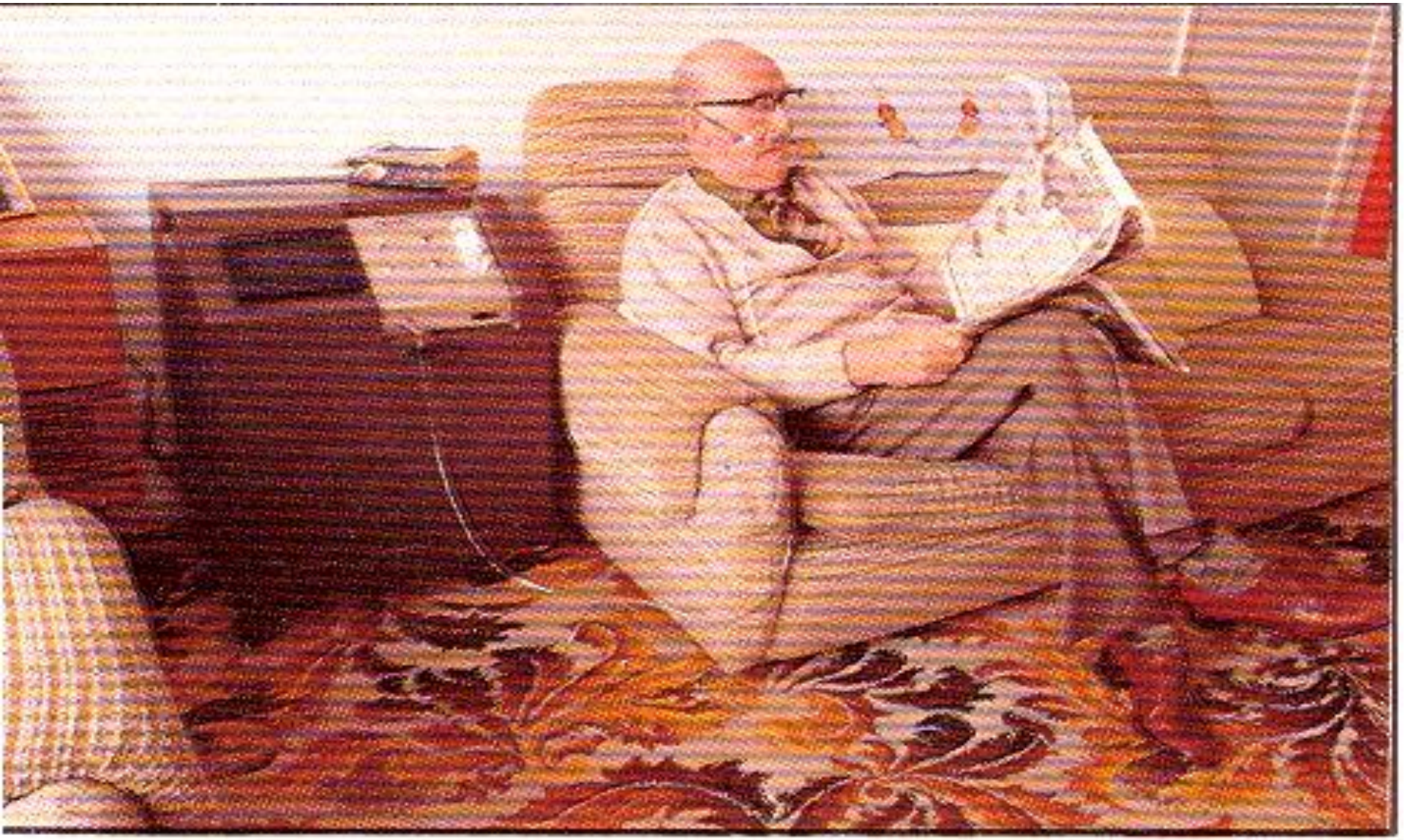


Fig. 1—Mortality in male patients.

Smooth curves indicate expected proportions surviving from 500 days, at constant risk of 11·9% per annum for those on oxygen, 29·4% per annum for the controls.

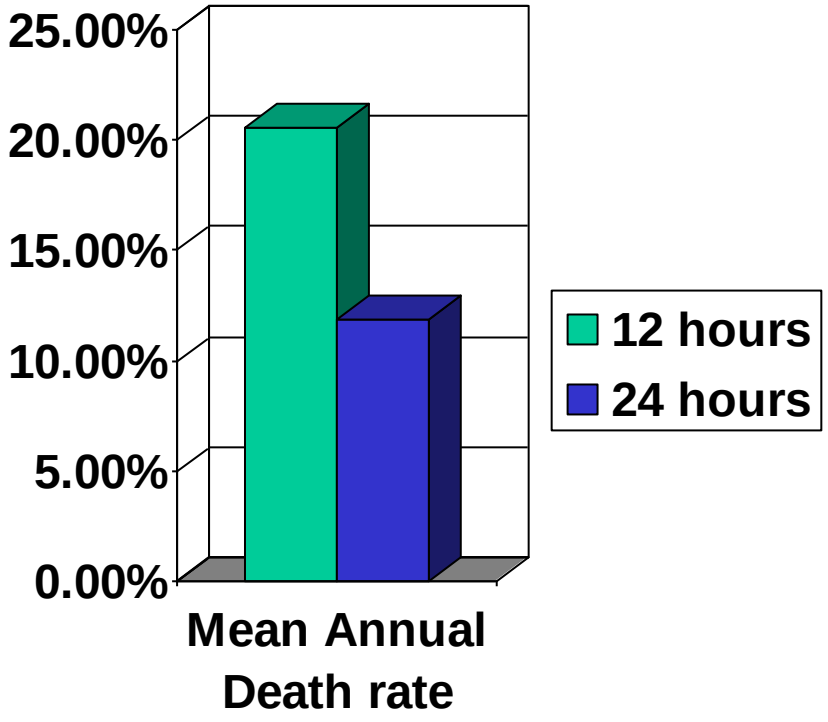
Domiciliary Oxygen from a concentrator



NHLBI NOTT study

(Ann Intern Med 1980;93:391-398)

- No control arm
- Compared 12 hours oxygen per day (102 patients) with 24 hours oxygen (101 patients)



LTOT for COPD : The criteria

- PaO2 <7.3 kPa when **stable** breathing air for at least 30 minutes after last supplementary oxygen, or
- PaO2 between 7.3 and 8.0 when **stable** but plus one of: Secondary polycythaemia

  Nocturnal Hypoxaemia (SaO2 <90% for >30% of the time)

  Peripheral oedema or pulmonary hypertension


Oxygen dewar
Portable flask

The patient pathway

Onset of a worsening of their condition- an exacerbation

Usual care – Stable disease

Onset of an exacerbation

Emergency department/ General Practitioner

Hospital Admission

Discharge

Patient diagnosed with COPD

The patient pathway

Onset of a worsening of their condition- an exacerbation

Usual care – Stable disease

Onset of an exacerbation

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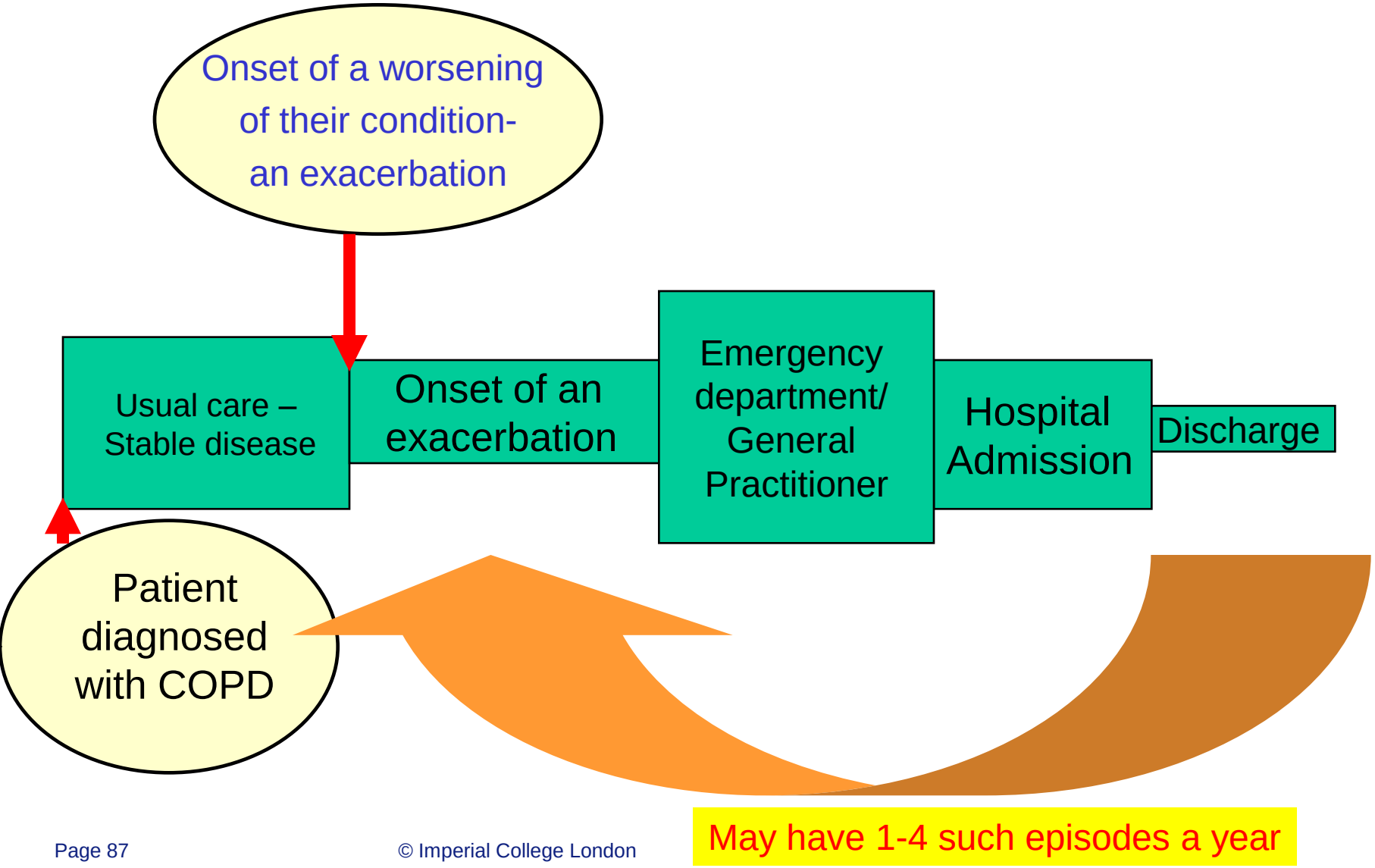
Patient diagnosed with COPD

The patient pathway



May have 1-4 such episodes a year

The patient pathway

Onset of a worsening of their condition- an exacerbation

Admission avoidance scheme *(Using the hospital at home scheme)*

Usual care – Stable disease

Onset of an exacerbation

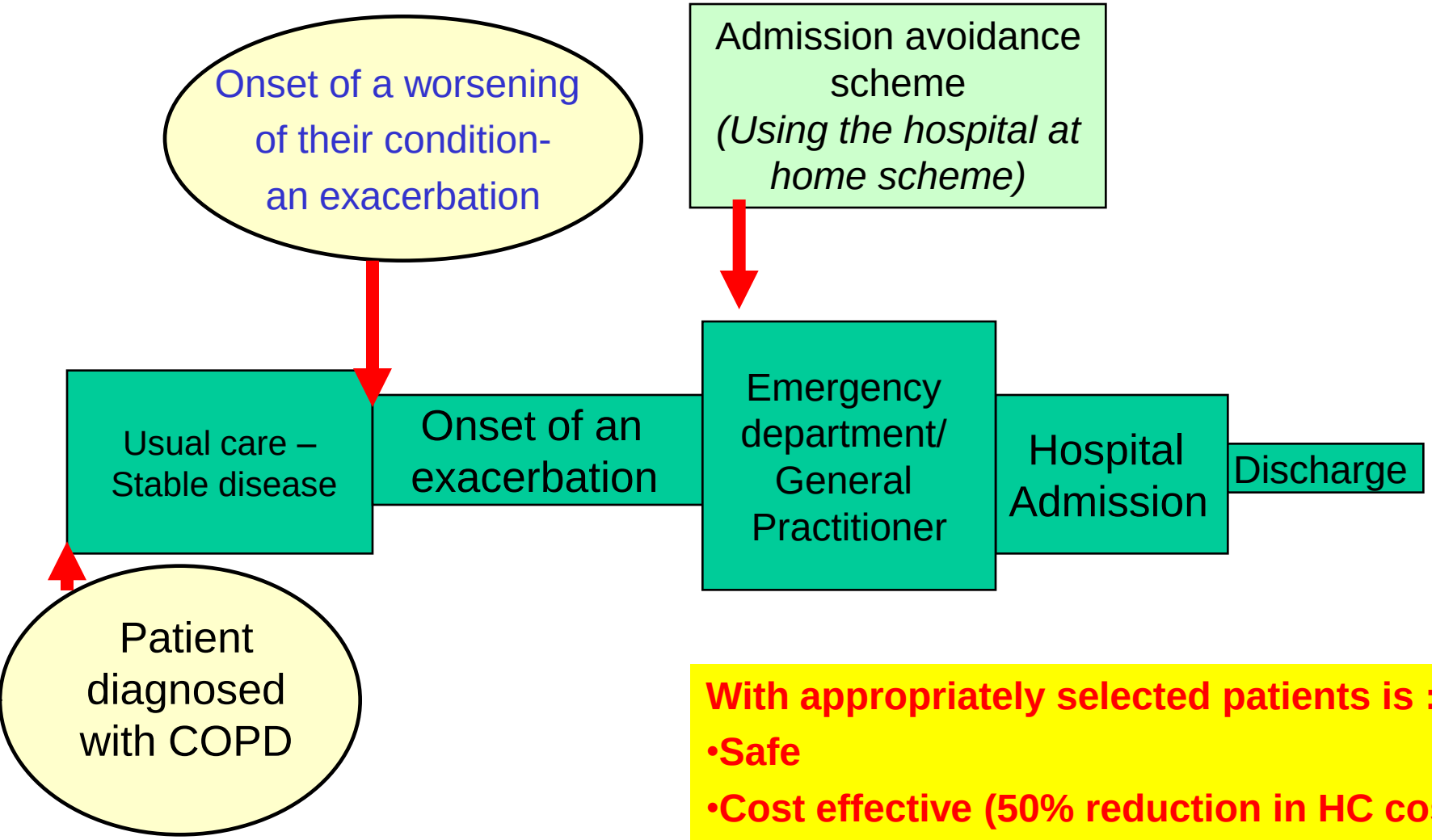
Emergency department/ General Practitioner

Hospital Admission

Discharge

Patient diagnosed with COPD

The patient pathway

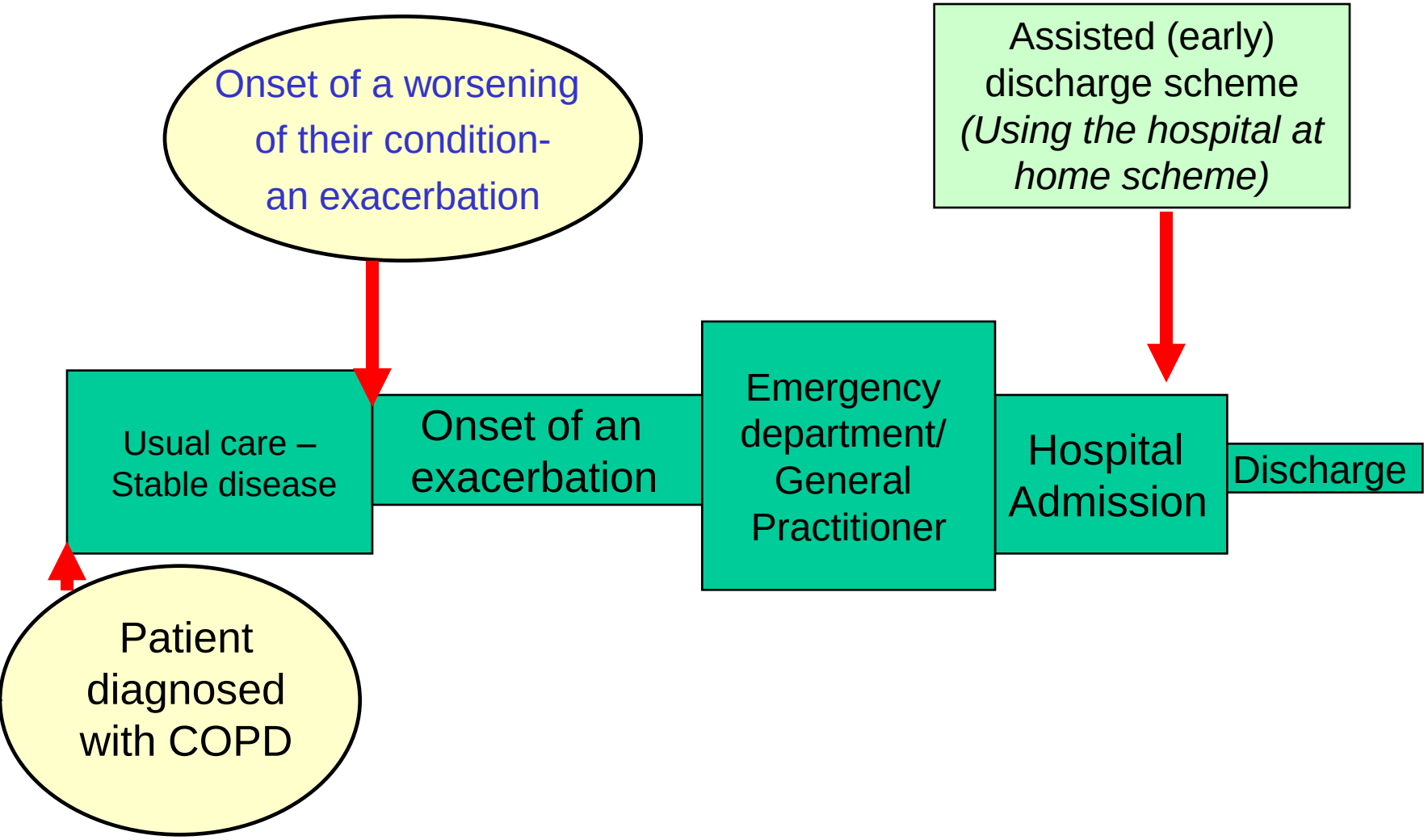


With appropriately selected patients is :

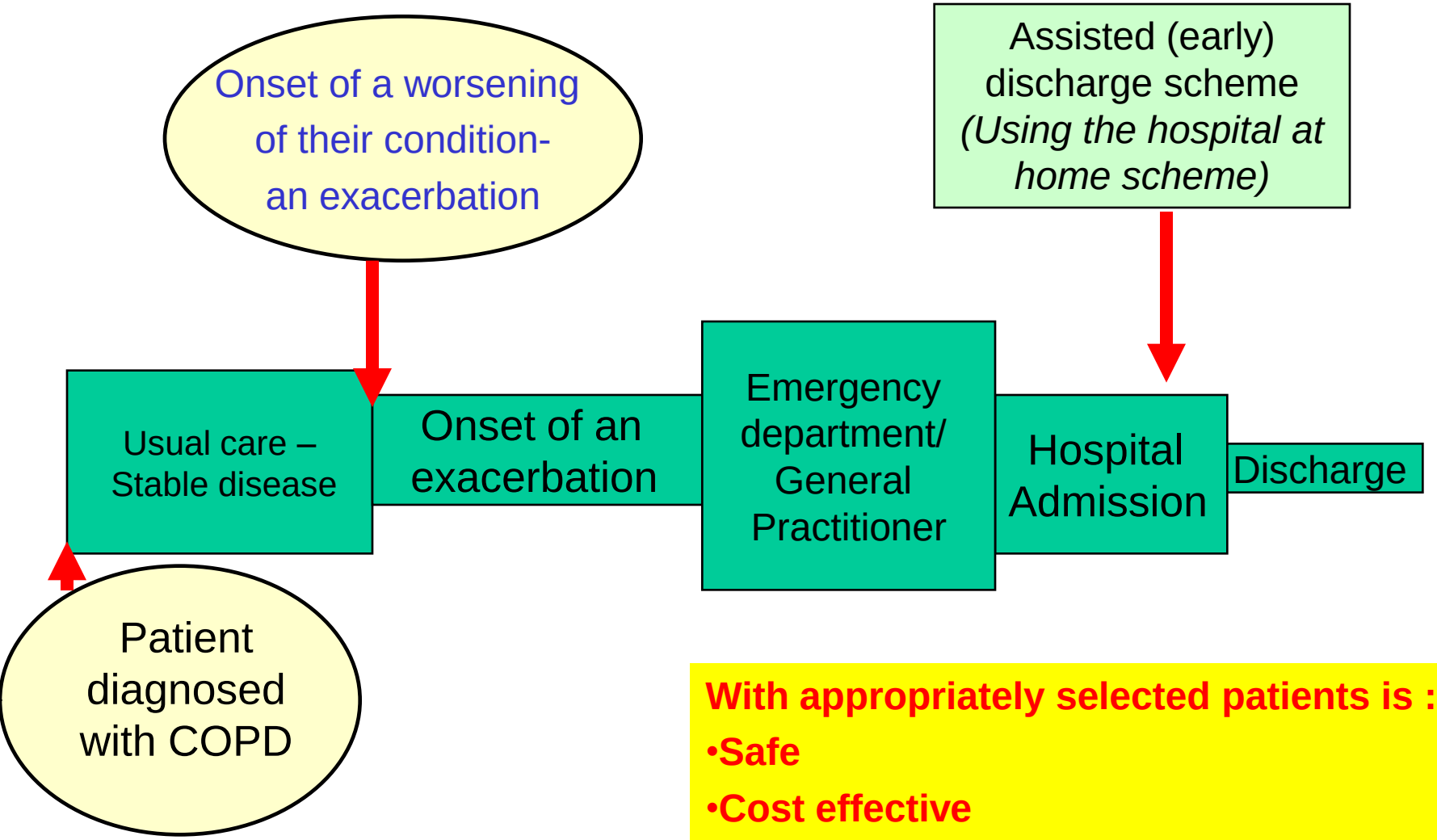
- **Safe**
- **Cost effective (50% reduction in HC costs)**

<u>But</u> only suitable for 5-25% of patients

The patient pathway



The patient pathway

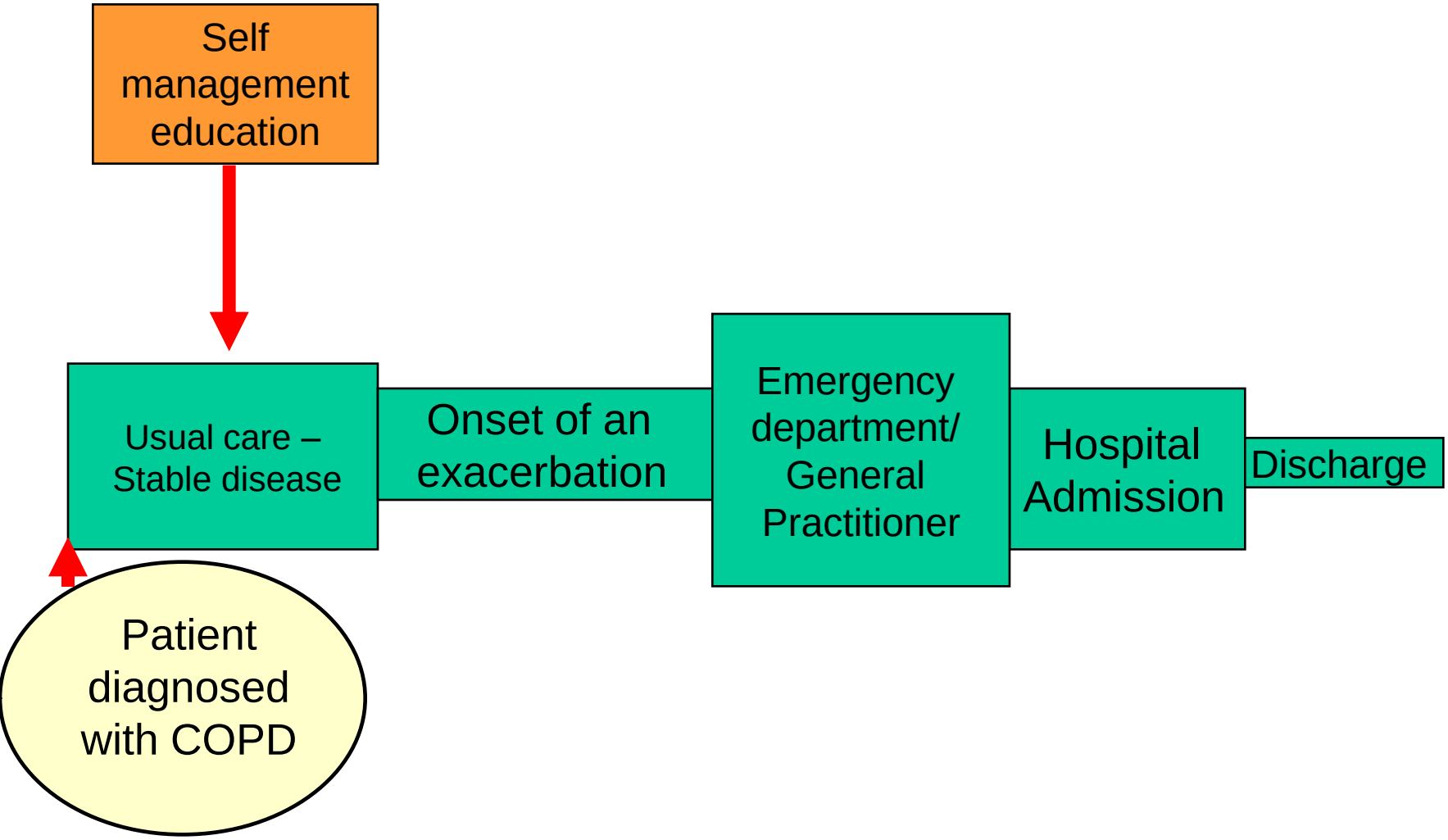


With appropriately selected patients is :

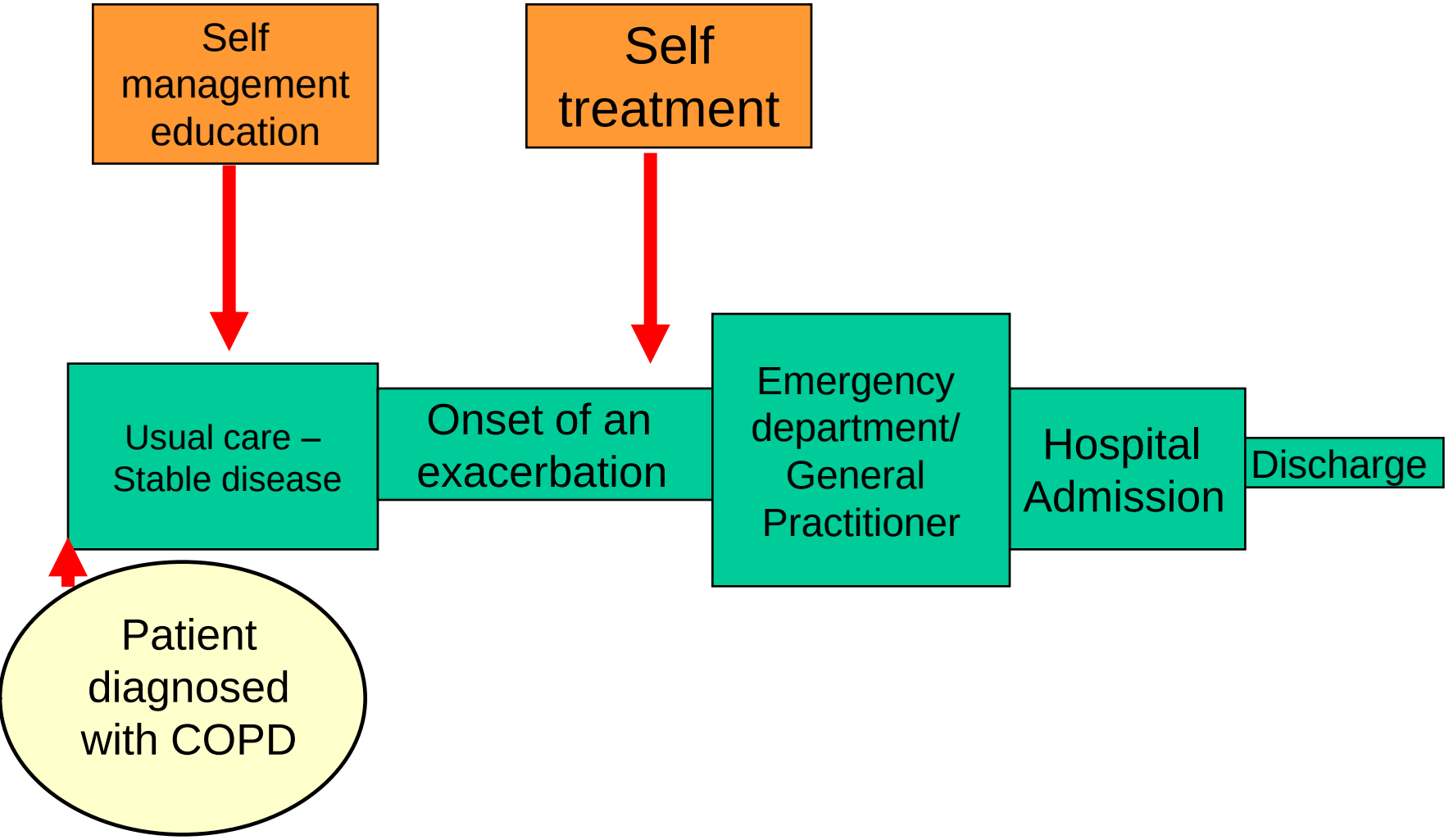
- **Safe**
- **Cost effective**
- **Available in 40% of UK hospitals**

<u>May be</u> suitable for up to 40% of patients

The patient pathway



The patient pathway



Does self Management Education work in COPD?

Does self management work in COPD?

Essentially too little data to yet say that it does

*Monninkhof E, van der Valk P, van der Palen J, van Herwaarden C, Partridge MR, Zielhuis G Thorax **2003**;58:394-398*

If results of self management in COPD are negative it might reflect:

- Poor studies
- Wrong intervention
- Lack of written action plans
- Ineffective interventions
- Wrong outcomes being monitored

Self management in COPD

Table 2 Characteristics of the self-management education intervention in each study

Reference	Group education	Individual education	Patient brochure	Audiotape	Exercise	Action plan	Smoking cessation	Nutrition
Gallefoss[8 15 16]	√		√			√	√	
Blake[17]		√	√	√				
Cockcroft[18]		√						
Emery[19]	√							
Gourley[20]/Solomon[21]		√						
Howland[22]	√				√		√	√
Littlejohns[23]		√						
Watson[24]			√		√	√	√	√

Monninkhof E, van der Valk P, van der Palen J, van Herwaarden C, Partridge MR, Zielhuis G Thorax 2003;58:394-398

The need for action plans in COPD

Use of Action plans:

- Increases recognition of a severe exacerbation
- Increases use of antibiotics
- Increases use of oral steroids

But **NOTE only 3 studies included in review** and results too few to assess effect on healthcare utilisation

Turnock AC et al Cochrane Database 2005

Department of Respiratory Medicine
Charing Cross Hospital

C.O.P.D. Self-management Card

Name: .....

Address: .....

Hospital No.: .....

Chest Specialists Name & Telephone Number:
.....

Respiratory Nurses Name & Telephone Number:
.....

General Practitioners Name & Telephone Number:
.....

How to Help Yourself

Lifestyle changes

1. Stop smoking, avoid smoking and avoid smoky environments.
2. If you are attempting to stop smoking take specialist advice about using nicotine replacement therapies and other smoking cessation medications and access local smoking support services as advised by your doctor or nurse
3. Remember that becoming breathless is not bad for you and regular exercise reduces the symptom of breathlessness, increases your activity levels and makes everyone feel happier!
4. Eat plenty of fruit and vegetables and those with COPD often find it preferable to eat small quantities more often. Gas forming foods such as onions, beans, sauerkraut, broccoli and cabbage are often best avoided. If you are very breathless you may find chewing uncomfortable and where it is possible to mash or liquidise food this may be easier to swallow. If eating makes you feel more breathless and you have oxygen available at home then discuss with your doctor or nurse whether taking additional oxygen using nasal cannulae (specs) may be worth trying.
5. Symptoms of coughing, sputum production and breathlessness are often worse first thing in the morning and this is a time when we often concentrate our physical activities such as exercising to dress, wash, make the bed, prepare breakfast etc. Make sure you have taken your medication as soon as you awake and try and spread out these early morning activities over a longer period to avoid distressing early morning symptoms. If showering is particularly difficult, the placing of a stool within the shower often helps. If you find drying yourself with a towel difficult and do not have a partner to do this for you, then sitting down and using a hair dryer to dry your back may be easier.
6. Ensure that you have annual flu vaccination and have had a vaccination against pneumonia.
7. Listen to weather forecasts and if very cold or polluted weather is expected make sure that you stay inside, drink plenty, take all your regular medications and if your condition does worsen adopt the advice contained within this action plan or seek medical attention.

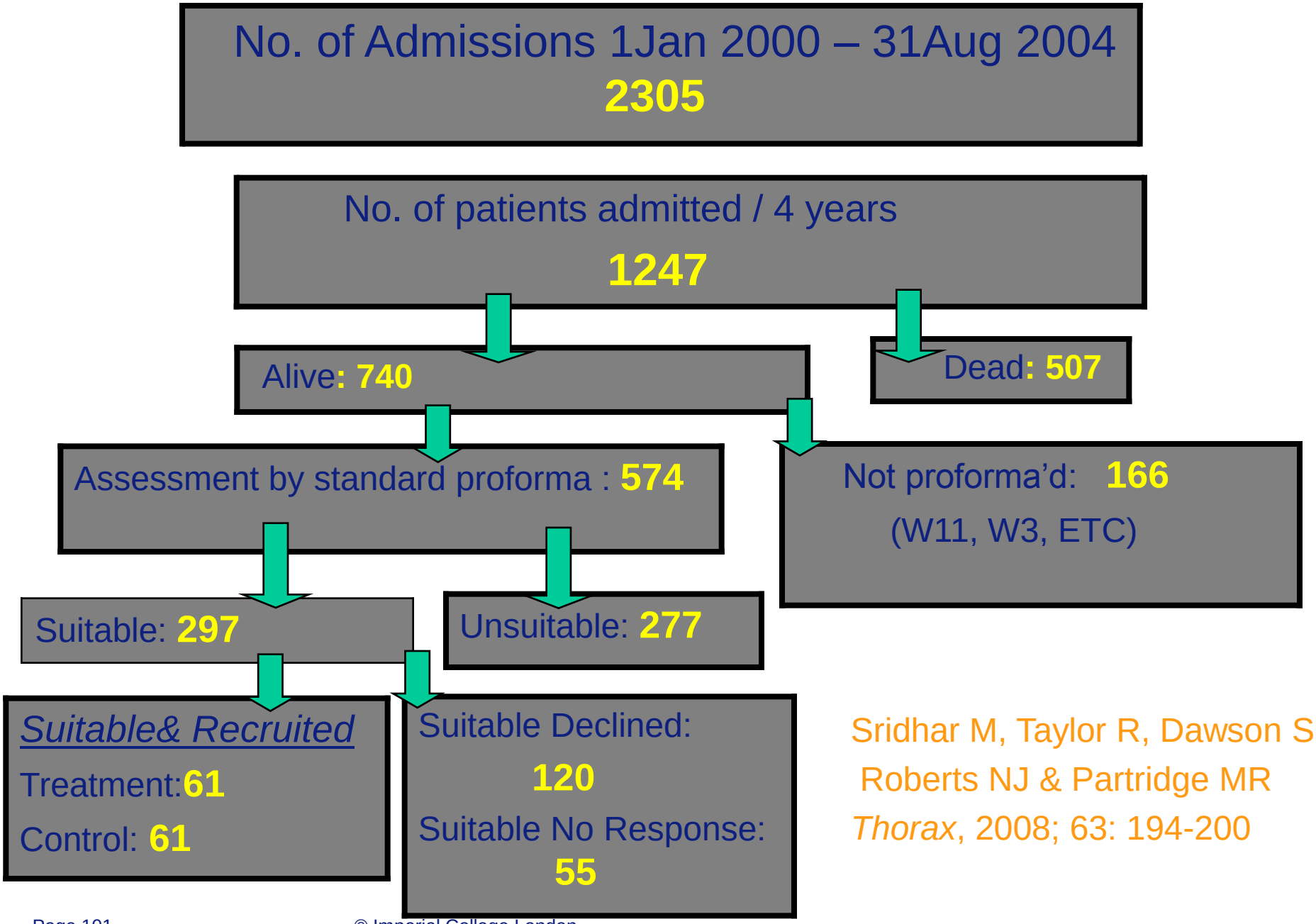
How to Take Your Treatment and How to Alter Treatment if Your Condition Worsens

Treatment changes

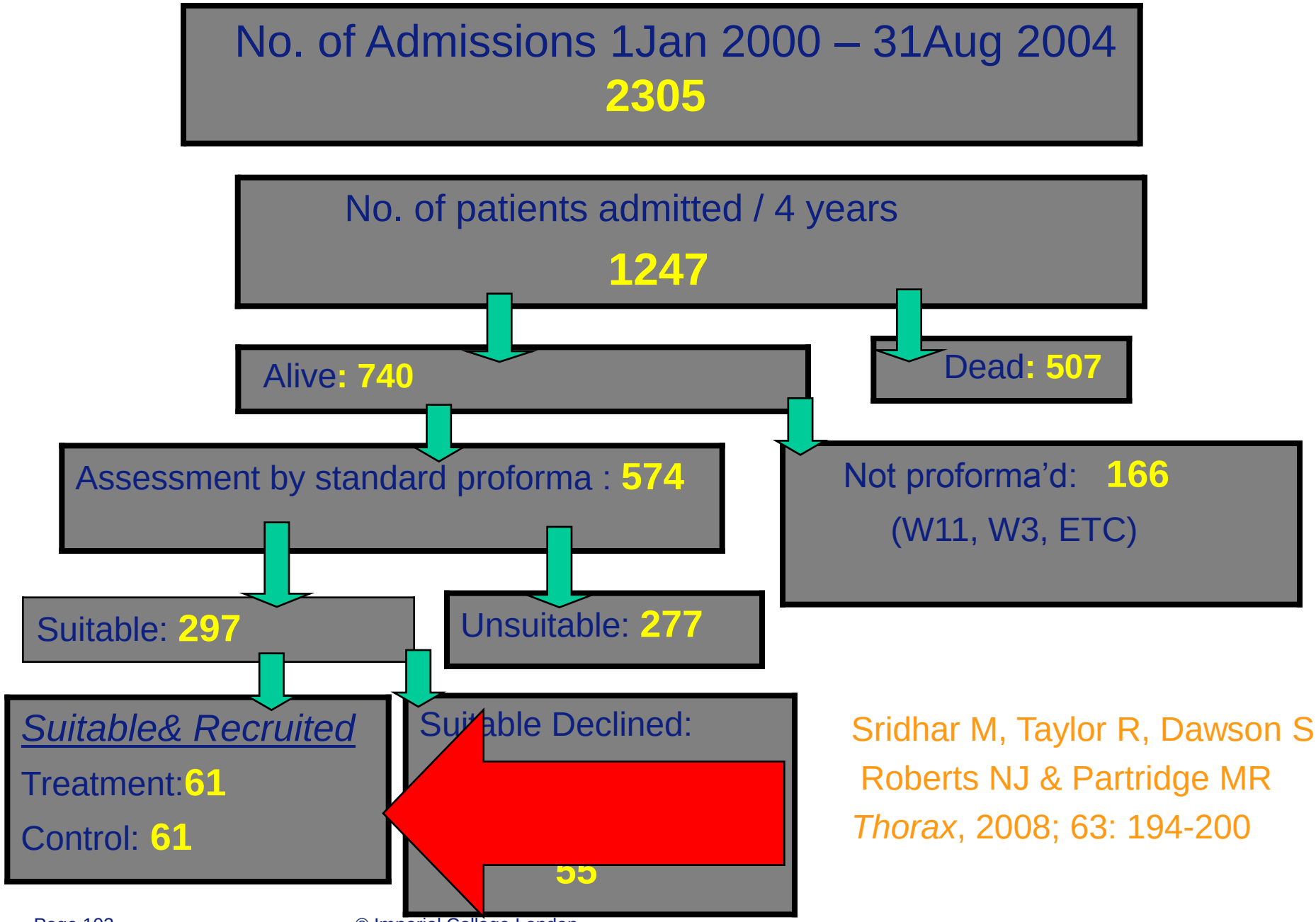
Using your medications:

1. Take your .....inhaler (.....) in the dose of .....Puffs, ...times every day
2. Take your .....inhaler (.....) in the dose of .....Puffs, ...times every day
3. Take your .....inhaler (.....) in the dose of .....Puffs, ...times every day
4. If you feel any more breathless, you may take your .....inhaler 2 puffs, every 3 to 4 hours to relieve symptoms and continue taking your regular inhalers as above.
5. If you notice more than two of the following situations then you should start your reserve supply of antibiotics and complete the whole course-
   - Increasingly short of breath
   - Increasing quantities of phlegm/sputum
   - Phlegm or sputum has turned persistently green
6. If despite taking your regular preventative therapies, and taking extra doses of your..... inhaler and despite starting a course of antibiotics you feel more breathless, then start six tablets (5mg strength) predinsolone immediately and repeat this dose every morning for 7 days before stopping the tablets. Let your doctor know after two days that you have started this course of steroid tablets.
7. If your ankles are more swollen than normal you should see your doctor.

If despite all these measures you still feel symptoms are worse then you should ring your doctor on.....



Sridhar M, Taylor R, Dawson S, Roberts NJ & Partridge MR *Thorax*, 2008; 63: 194-200



Sridhar M, Taylor R, Dawson S, Roberts NJ & Partridge MR *Thorax*, 2008; 63: 194-200

RESULTS

	Intervention Group			Control Group		
Exacerbation Treatment Initiator	Baseline N=61	Year 1 N=57	Year 2 N=55	Baseline N=61	Year 1 N=53	Year 2 N=49
Self			**192/445 (43.1%)**			**38/364 P chi ^{2} <0.001 (10.4%)**
Research Nurse			28/445(6.3%)			0 P chi ^{2} <0.001
GP			**140/445 (31.5%)**			**250/364 P chi ^{2} <0.001 (68.7%)**
A&E doctor			4/445 (0.9%)			9 /364 (2.5%)
OP Clinic doctor			13/445 (2.9%)			49/364 (5.2%)

Self management behaviour much greater in those in the intervention group than amongst controls who were more likely to have treatment for exacerbations instituted by the GP

RESULTS

Intervention Group Control Group

	Baseline N=61	Year 1 N=57	Year 2 N=55 (445 Exacerbations)	Baseline N=61	Year 1 N=53	Year 2 N=49
Unscheduled GP visits / contacts in 2 yrs			**171**			**280** **P chi ^{2} <0.001**

Unscheduled need for contact with a GP was statistically much less in the intervention group where patients were more likely to self treat themselves

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RESULTS

Intervention Group Control Group

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Unsched
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And the death rate was halved

In the intervention group compared to controls

Sridhar M, Taylor R, Dawson S, Roberts NJ & Partridge MR *Thorax*, 2008; 63: 194-200

So what is the bottom line? What are the key points in successful management of COPD?

Systematic Review of the Chronic care model in COPD *(Adams AG et al Arch Intern Med 2007;167:551-561)*

Trials that resulted in reduced health care use provided the following:

1. An extensive self management program with an individualized action plan
2. Advanced access to care ("Knowledgeable health care provider")
3. Guideline based therapy
4. A clinical registry

Similarly for those with asthma we need to ensure

Similarly for those with asthma we need to ensure

- Is involved in decision making regarding their treatment
- Is offered control of their own condition
- Has support and follow up that is convenient

Guidelines for management of asthma in adults: I—chronic persistent asthma

Statement by the British Thoracic Society, Research Unit of the Royal College of Physicians of London, King's Fund Centre, National Asthma Campaign

The morbidity and mortality associated with asthma are unacceptably high in Britain. Many deaths and much unnecessary morbidity have been connected with underuse of inhaled and oral corticosteroids, underuse of objective measurements of severity, and inadequate supervision.[1-3] As a result of an initiative from the British Thoracic Society, the research unit of the Royal College of Physicians of London, the King's Fund Centre, and the National Asthma Campaign a group of interested physicians and general practitioners was brought together to produce guidelines for the management of asthma in adults. This paper gives guidance on the management of chronic persistent asthma. Guidelines for the management of acute severe asthma will be published in next week's issue.

The recommendations for chronic persistent asthma promote greater use of anti-inflammatory drugs, even in patients with apparently mild asthma; objective monitoring of the progress of asthma using the patients' own measurements of peak expiratory flow; and greater participation of the patient in the management of the condition.

Description of asthma

Asthma is a common and chronic inflammatory condition of the airways whose cause is not completely understood. As a result of inflammation the airways are hyperresponsive and they narrow easily in response to a wide range of stimuli. This may result in coughing, wheezing, chest tightness, and shortness of breath; these symptoms are often worse at night. Narrowing of the airway is usually reversible, but in some patients with chronic asthma the inflammation may lead to irreversible obstruction of air flow.

Characteristic pathological features include the presence in the airway of inflammatory cells, plasma exudation, oedema, hypertrophy of smooth muscle, mucus plugging, and shedding of epithelium. These changes may be present even in patients with mild asthma when they have few symptoms.

Aims of management

The aims of management in adults are to recognise asthma, abolish symptoms, and restore normal or best possible long term function of the airways and reduce the risk of a severe attack. This last aim should be achieved by avoiding recognised causes if they exist and by using the lowest effective doses of convenient treatments with minimal short and long term side

A list of participants is given at the end of

Correspondence to: Thoracic Society, St Andrew's Place, London NW1 4LB.

BMJ 1990;301:651-3

BMJ 1990

asthma

ry condition anti- to most patients.

stepwise manner below, with the patients starting treatment at the step most appropriate for the initial severity of their condition. A short course of oral corticosteroids may be needed at any time and at any step to control their asthma (see box).

Treatment with short course of oral steroids

Short courses of oral steroids may be needed to control exacerbations of asthma at any step. Indications are:

- Symptoms and peak expiratory flow get progressively worse each day
- Peak expiratory flow falls below 60% of patient's best result
- Sleep is disturbed by asthma
- Morning symptoms persist until midday
- Maximum treatment not including oral steroids does not work
- Emergency nebuliser or injected bronchodilators are needed

Give patients prednisolone 30-60 mg daily (60 mg if they are already taking oral steroids) until two days after full recovery, when the drug may be stopped or the dose tapered.

If arranged beforehand short courses of oral steroids may be started on the patient's initiative according to written guidance.

Avoidance

If agents such as allergens, occupational sensitising chemicals, and certain drugs—for example, aspirin and non-steroidal anti-inflammatory drugs—are known to induce asthma in a patient they should be avoided if possible. β Blockers are contraindicated in patients with asthma. Avoidance of day to day triggers such as exercise and cold air generally imposes inappropriate restrictions on lifestyle, and it may be preferable to adjust treatment to cover exposure to these. Smoking should be avoided.

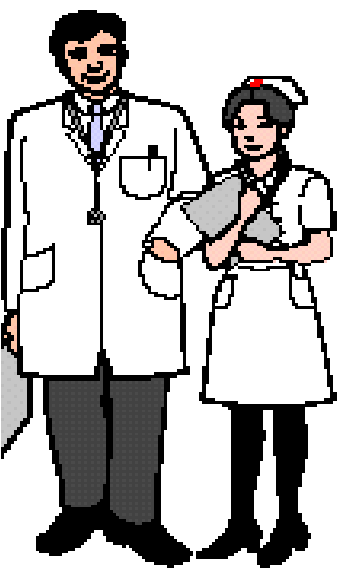
(1) Bronchodilators

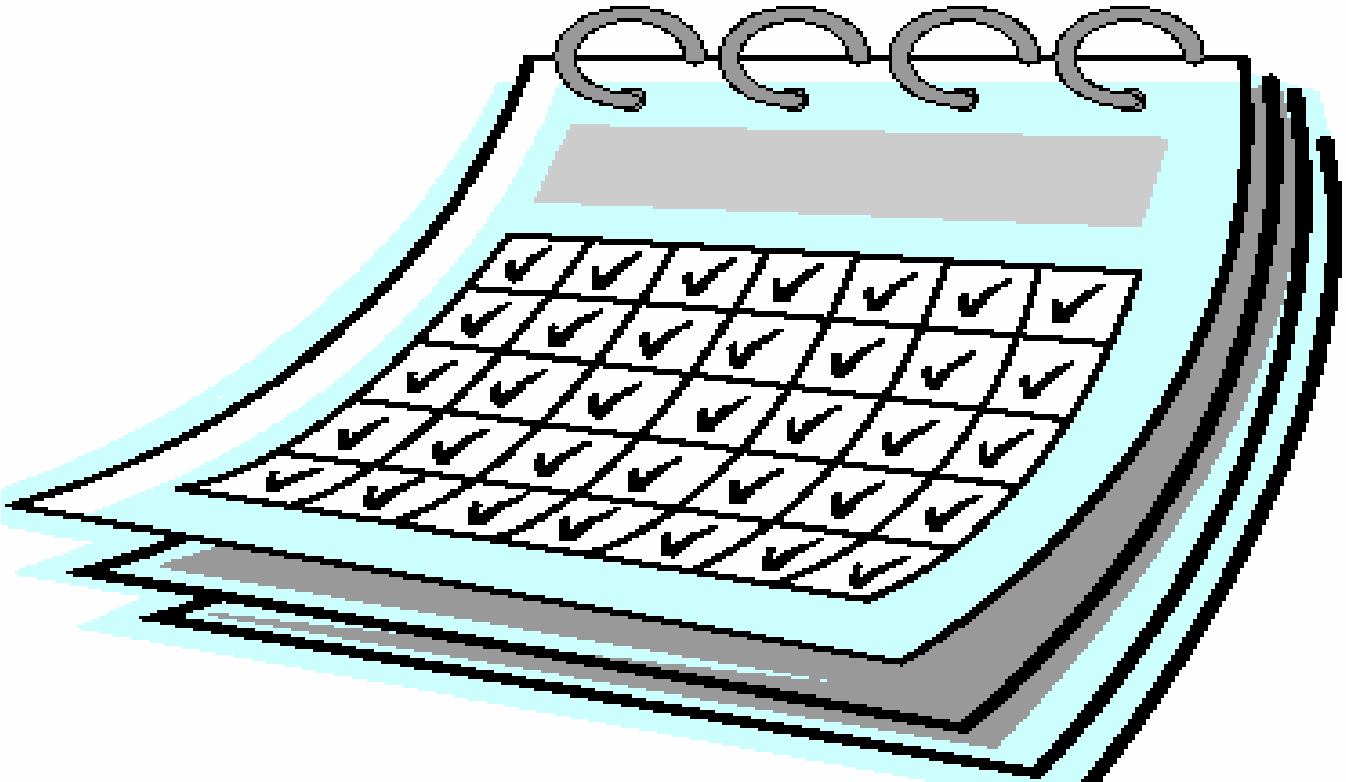
A β_2 agonist (such as salbutamol 100-200 μg or terbutaline 250-500 μg) should be used as required rather than regularly. Inhalation is the preferred means of administration: the drug is delivered direct to the airway, doses are small, and side effects are minimised. In patients with normal lung function who have only infrequent symptoms and no sleep disturbance this may be the only treatment required.

(2) Inhaled anti-inflammatory agents

Patients who need to inhale a bronchodilator more than once daily or who have night time symptoms require regular inhaled anti-inflammatory drugs. Options include corticosteroids, sodium cromoglycate (5-20 mg four times daily), and nedocromil sodium

" As far as possible patients should be trained to manage their own treatment rather than be required to consult their doctor before making changes"





For the other 364 days, 23 hours and 30 minutes

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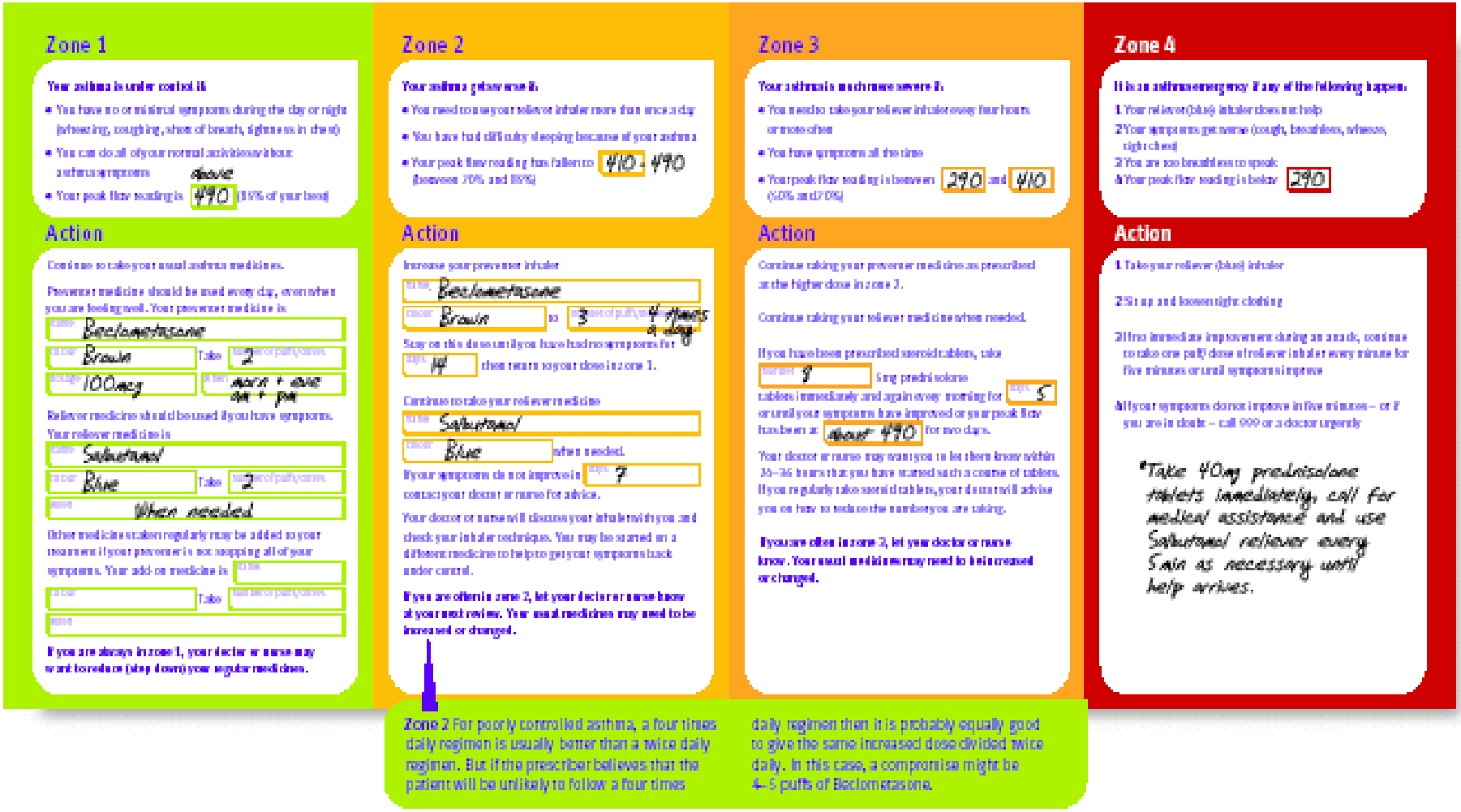
Written asthma action plans



Zone 2 For poorly controlled asthma, a four times daily regimen is usually better than a twice daily regimen. But if the prescriber believes that the patient will be unlikely to follow a four times daily regimen then it is probably equally good to give the same increased dose divided twice daily. In this case, a compromise might be 4–5 puffs of Beclometasone.

Conclusion 1:

- Asthma and COPD share symptoms
- Objective confirmation of diagnosis wherever possible and recording justification of how a diagnosis is made in the notes is important
- The aim in both conditions is both current control and reduction of future risk,
- In Asthma this means adding formoterol to the essential inhaled steroid and where appropriate using it both regularly and as required

Conclusion 2:

- In COPD this means adding inhaled steroids to formoterol to reduce exacerbations and taking the two medicines on waking (and possibly plus tiotropium) to reduce morning symptoms
- In both diseases we should adopt a patient centred approach which necessitates us hearing our patients concerns, and offering convenient support as the informed patient self manages their own condition.

Imperial College London

Thank you

http://www1.imperial.ac.uk/medicine/people/m.partridge/