



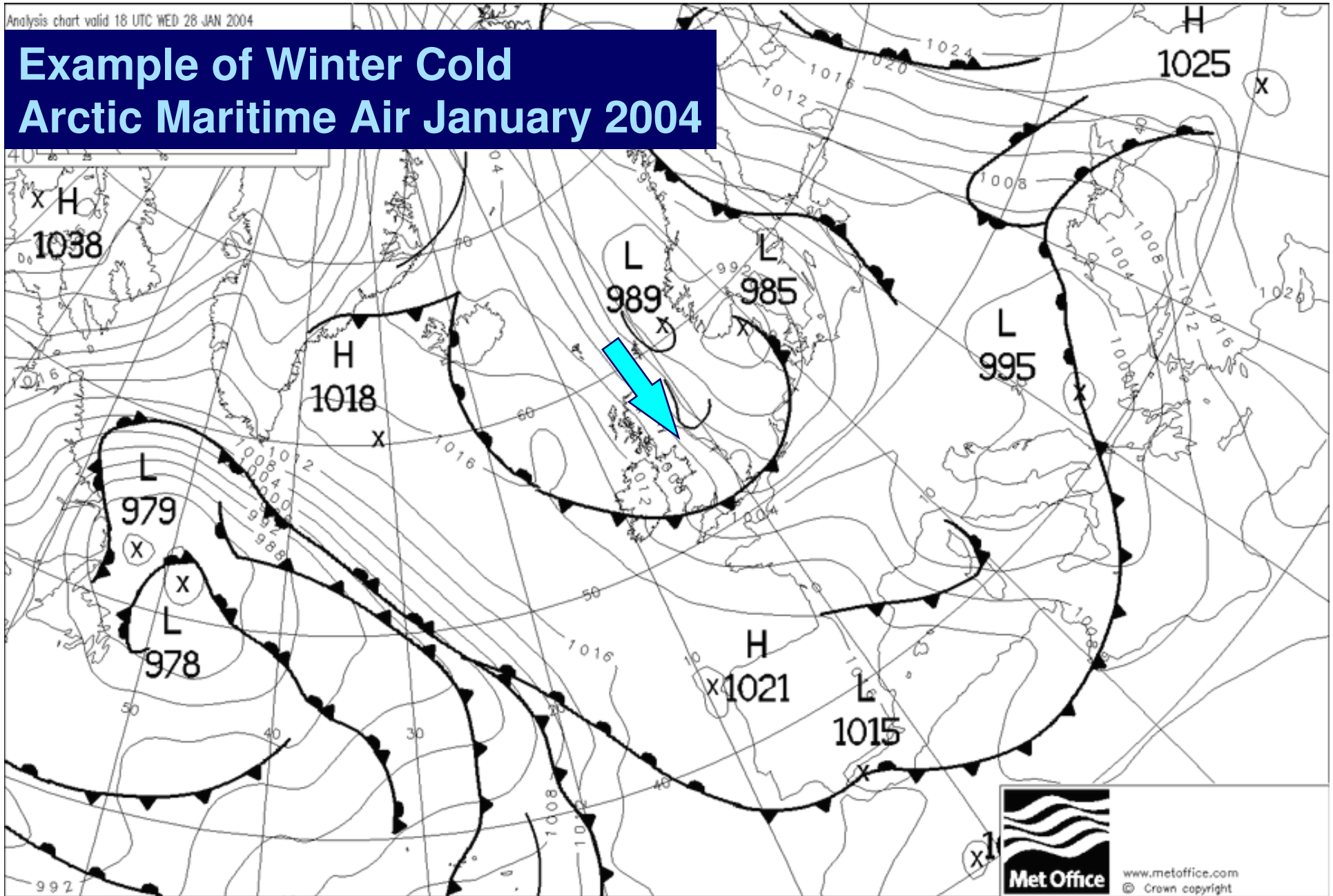
# Reducing Hospital Admissions Using Health Forecasting

Patrick Sachon, May 2007



- The concept of COPD Health Forecasting
- Feedback on early services
- Automated COPD Health Forecasting
- Benefits of Automated service
- Plans for future

# Example of Winter Cold Arctic Maritime Air January 2004

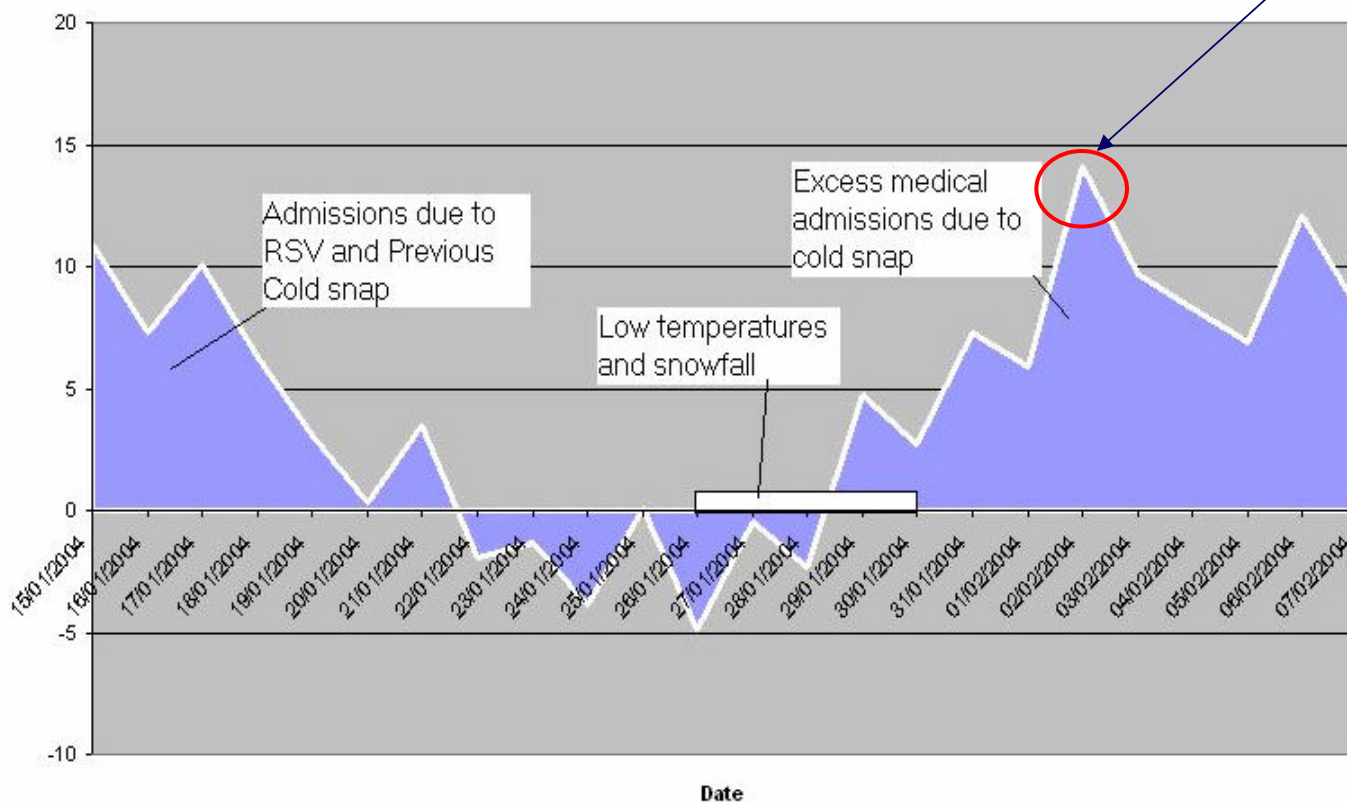


# The Effect of Cold on Hospital Admissions



COPD admissions 10- 12 day lag

SE London Emergency Medical Admissions  
Variance from 4 week mean. Using Week 4 as reference week



# The environment and COPD



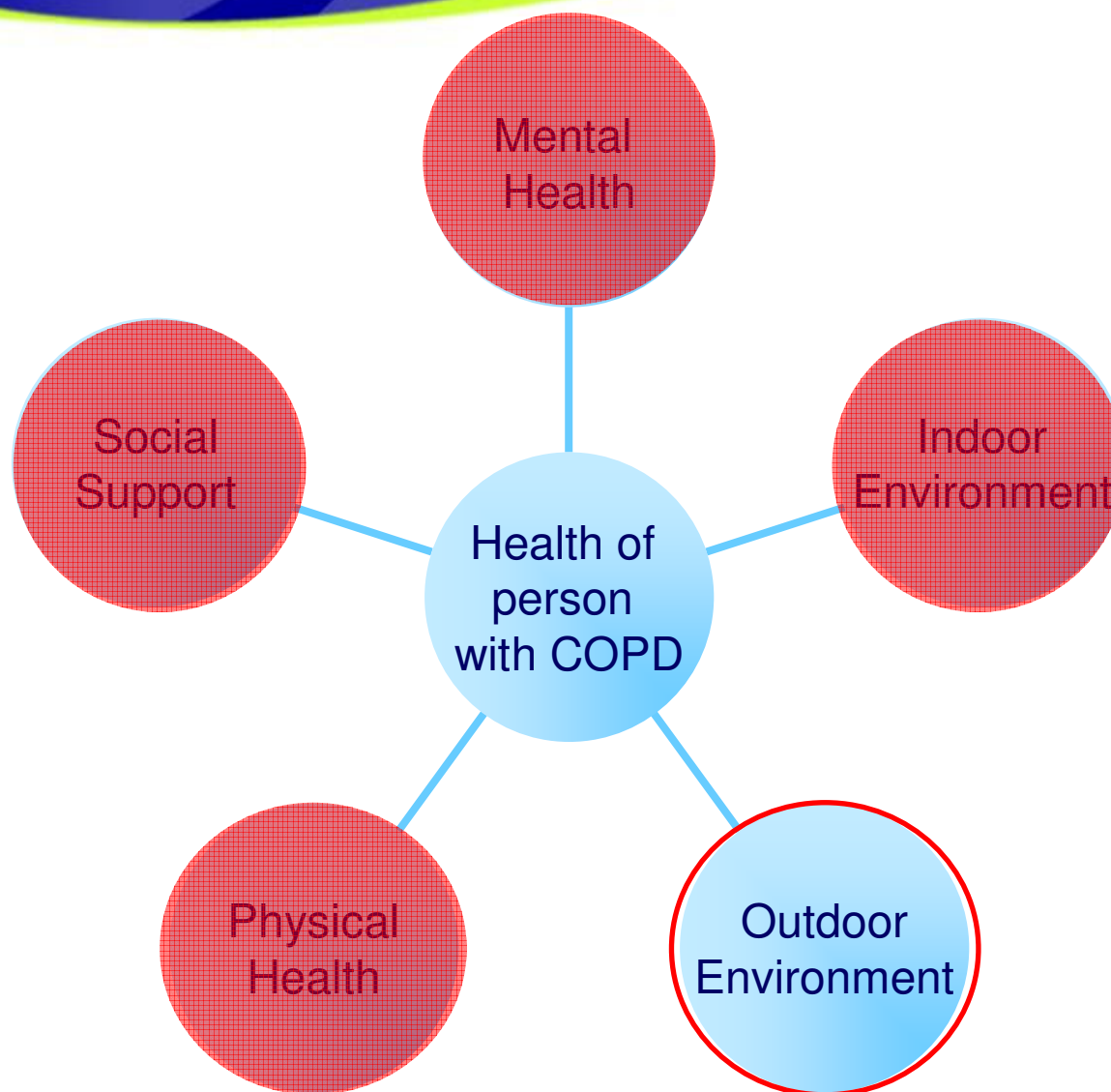
The effect on COPD hospital admissions of an increase of 50 $\mu$ g of different pollutants and other environmental factors

Variable	Effect	Lag
Cold	30-50%	12 days
Heat	20%	1 day
Humidity	5%	3 days
PM10	4%	1 day
Sulphur Dioxide	2%	1 day
Ozone	2%	1 day

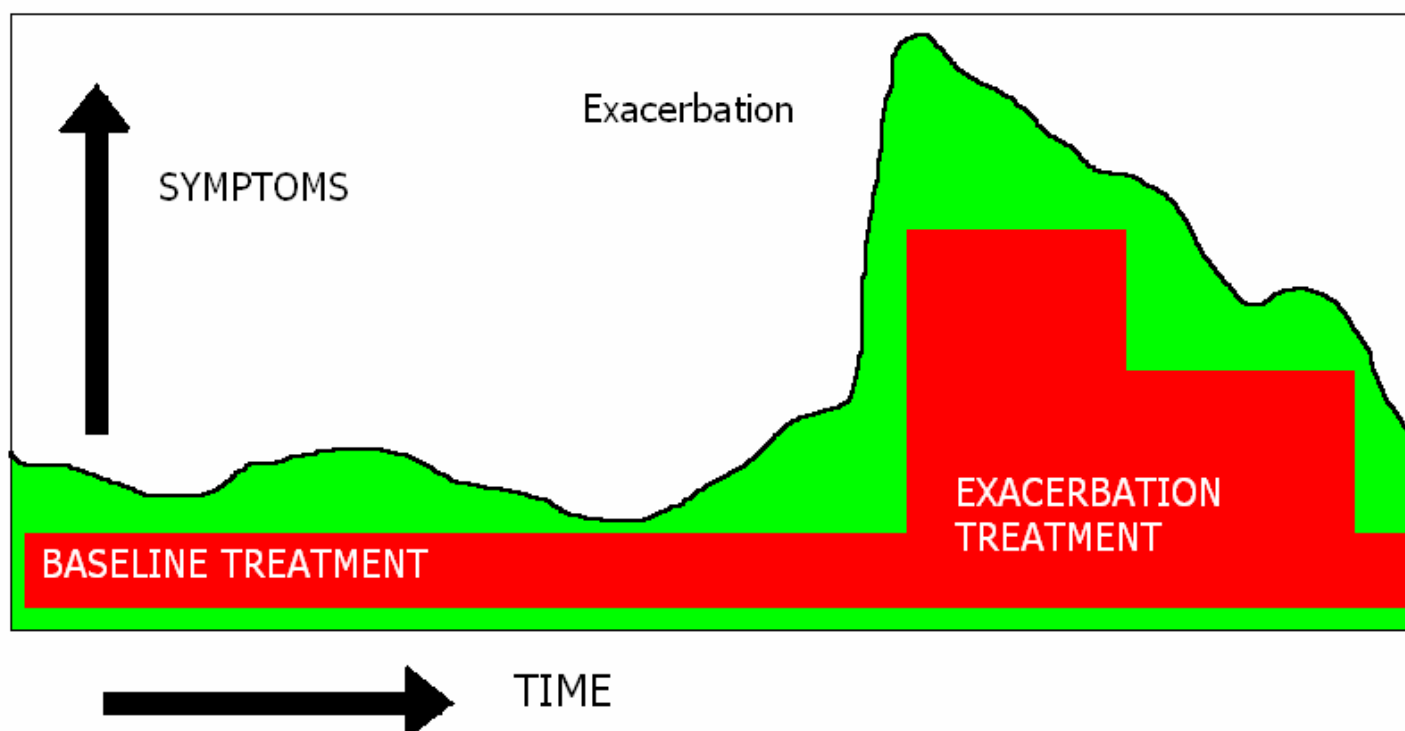
COPD Health Forecasting is about ...

...identifying **who** is at risk and forecasting  
**when** and **where** they are at risk ...

... and using this information to administer  
**anticipatory care** to help keep people with  
COPD **well**.

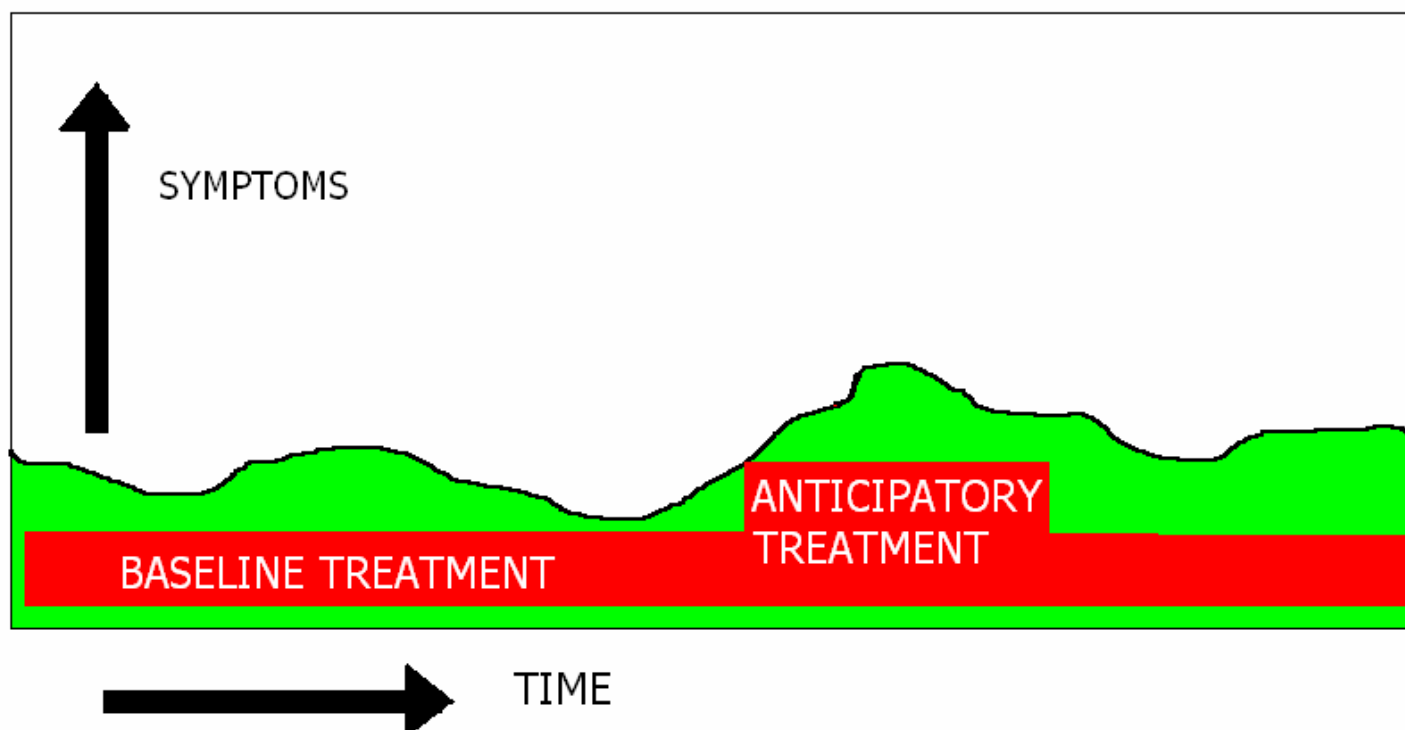


## Usual care for people with COPD without a Health Forecast





In some patients this intervention will prevent an exacerbation and hospitalisation





Interventions developed and endorsed by our **COPD Clinical Advisory Group**, chaired by Dr David Halpin. This group is key to maintaining best practice.

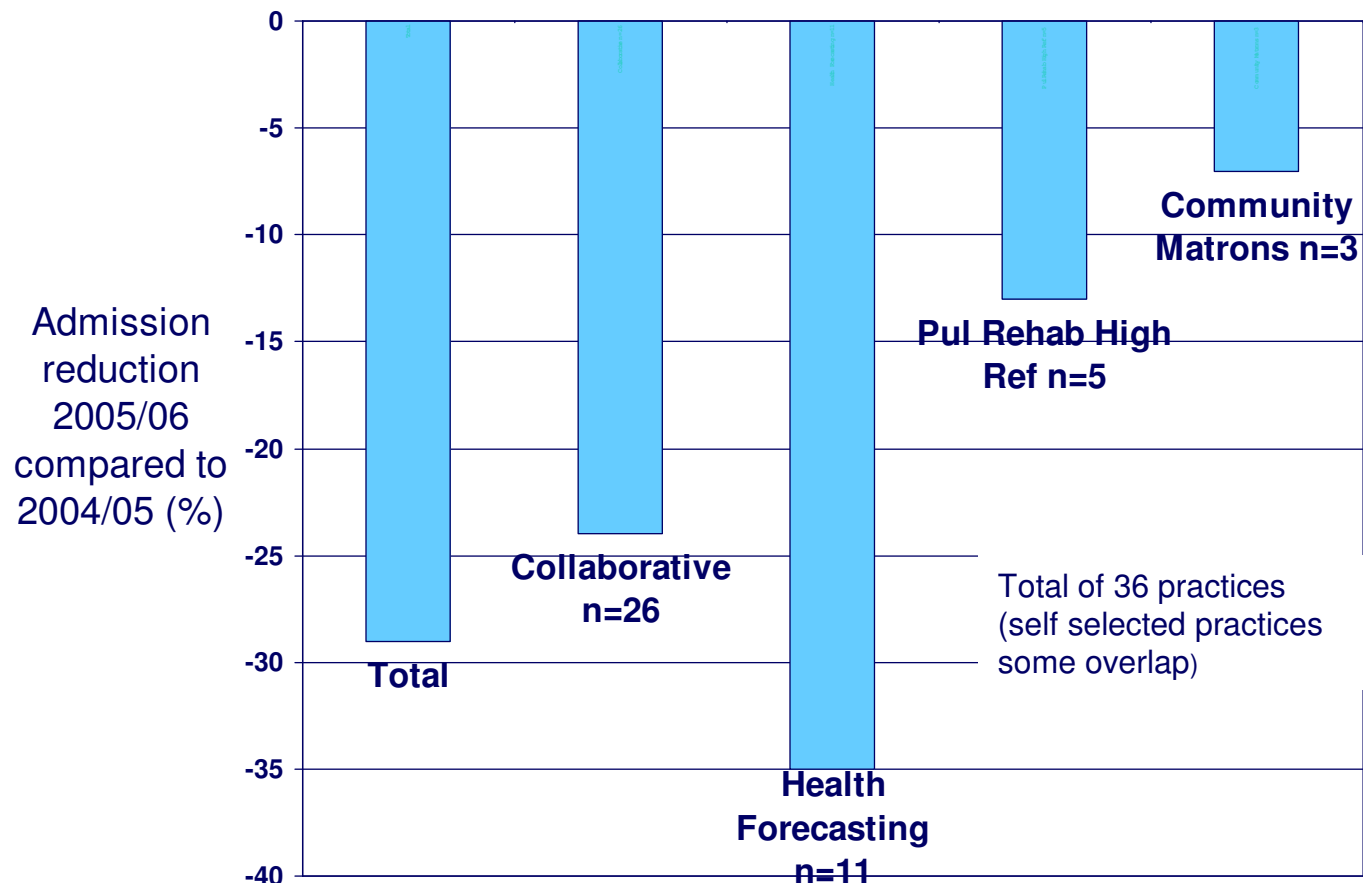
The interventions are:

- Early reporting of symptoms
- Available medication
- Keeping the house warm
- Cold outdoor temperatures
- Physical activity
- Anxiety and depression
- Treatment based on NICE Guidelines

# COPD health forecasting – the benefits



In South Warwickshire practices that used COPD forecasts saw a 35% reduction in COPD admissions outperforming practices using other strategies



## South Warwickshire

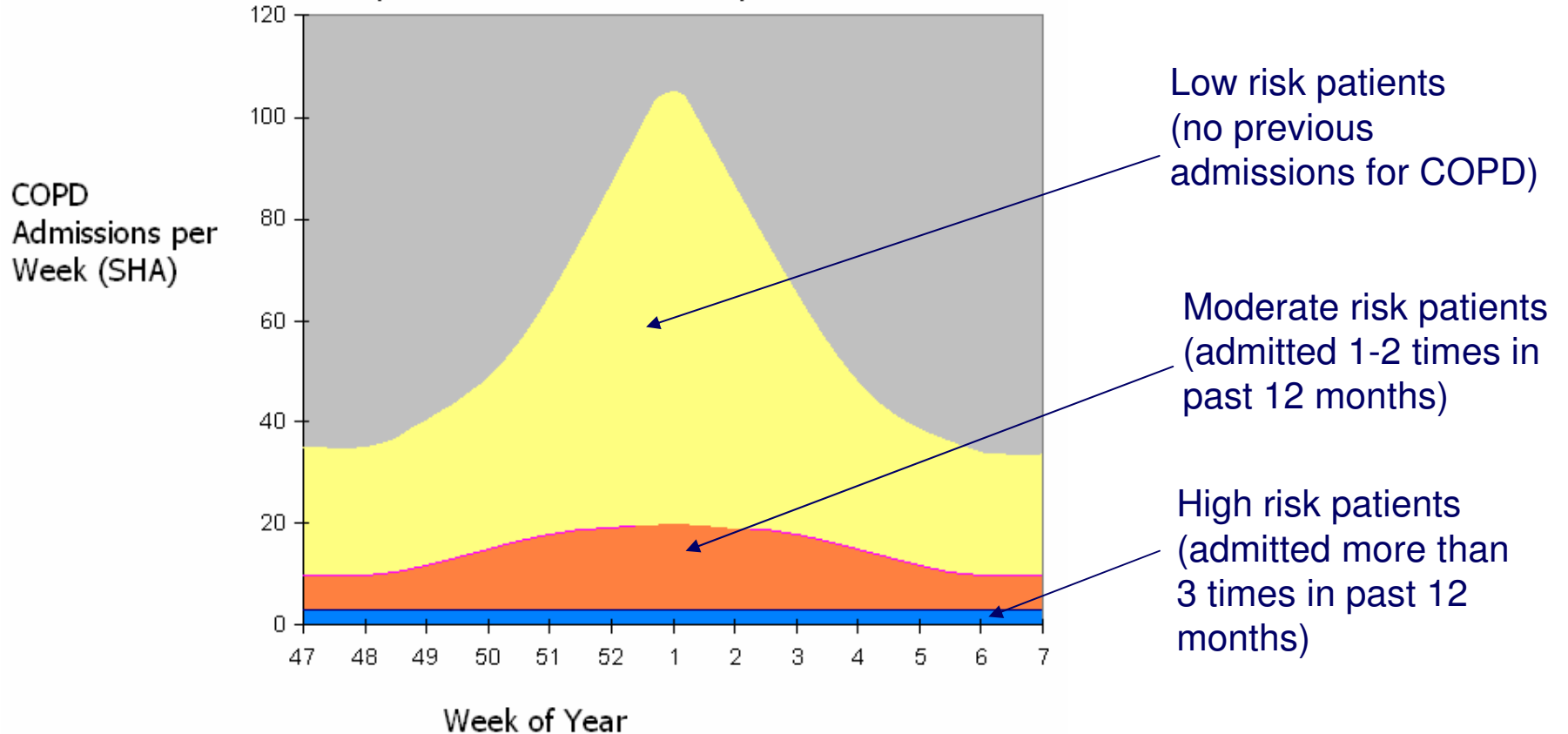
- 11 practices used Health Forecasting
- 86 admissions avoided during 2 year period
- **£147,000 saved** (using national tariff of £1709 per admission)

# Identifying risk by person...



'Low risk' patients make up 70% of admissions during winter, and 90% of week-on-week variation

Average Winter showing that 90% of increase is from low risk patients with no admission in previous 12 months



# Identifying risk by person...



Over a typical winter in a typical practice most admissions are from low risk patients

	Patients	Admissions
List size	10,415	
COPD register	112	
No admission group	99	6
1-3 previous admissions	6	1
3 or more admissions	7	2

Based on National Tariff for COPD admission without complications

- Making calls in person takes up too much time
- We don't have the resources to make all the calls
- We are unable to make contact by telephone as not all patients are not in during surgery opening hours

- Can we automate patient contact?
- Can it be done technically?
- Will patients like it?
- Will it deliver the same patient benefit?





## **Partnership between Met Office and Medixine**

Medixine specialise in multimodal healthcare communication technologies. Met Office specialises in health forecasting

## **Funding Partnership between NHS and Social Care**

The project was part funded by Cornwall Social Care and Cornwall PCT

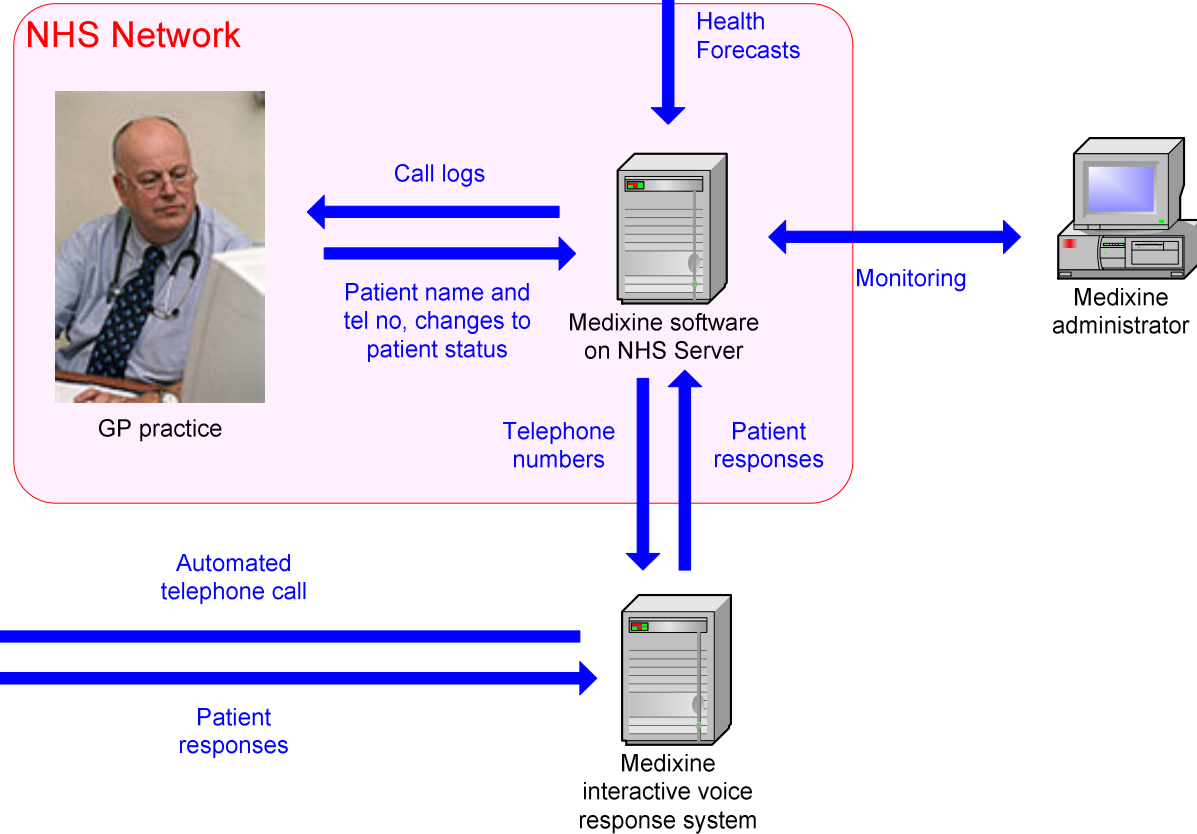
## **Rapid service set up for complex IT project**

Funding agreed late August – service live in mid November with 400+ patients recruited

# How the system works



Met Office Forecaster



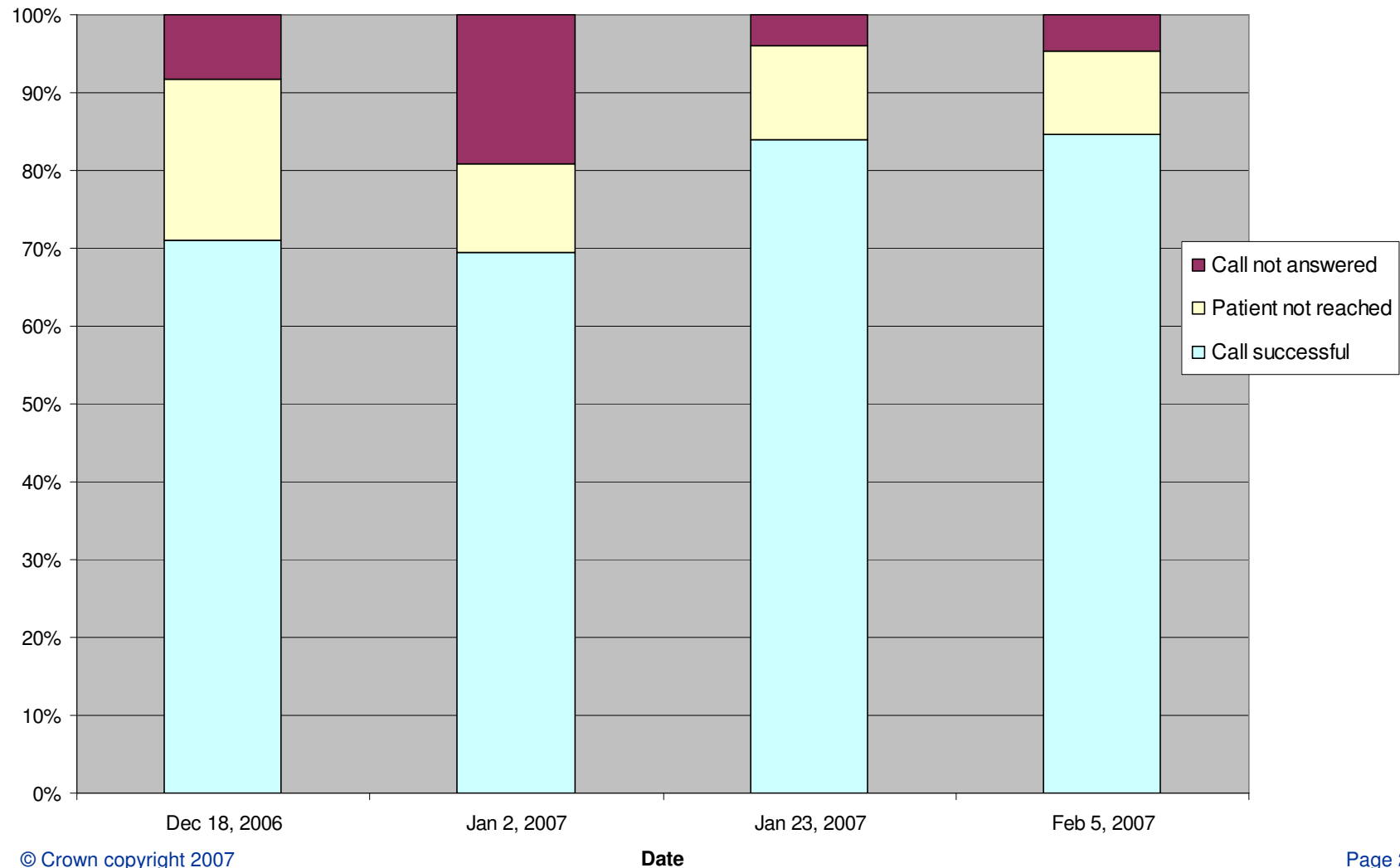
Person with COPD

Remember to play film now!

# Analysis of calls



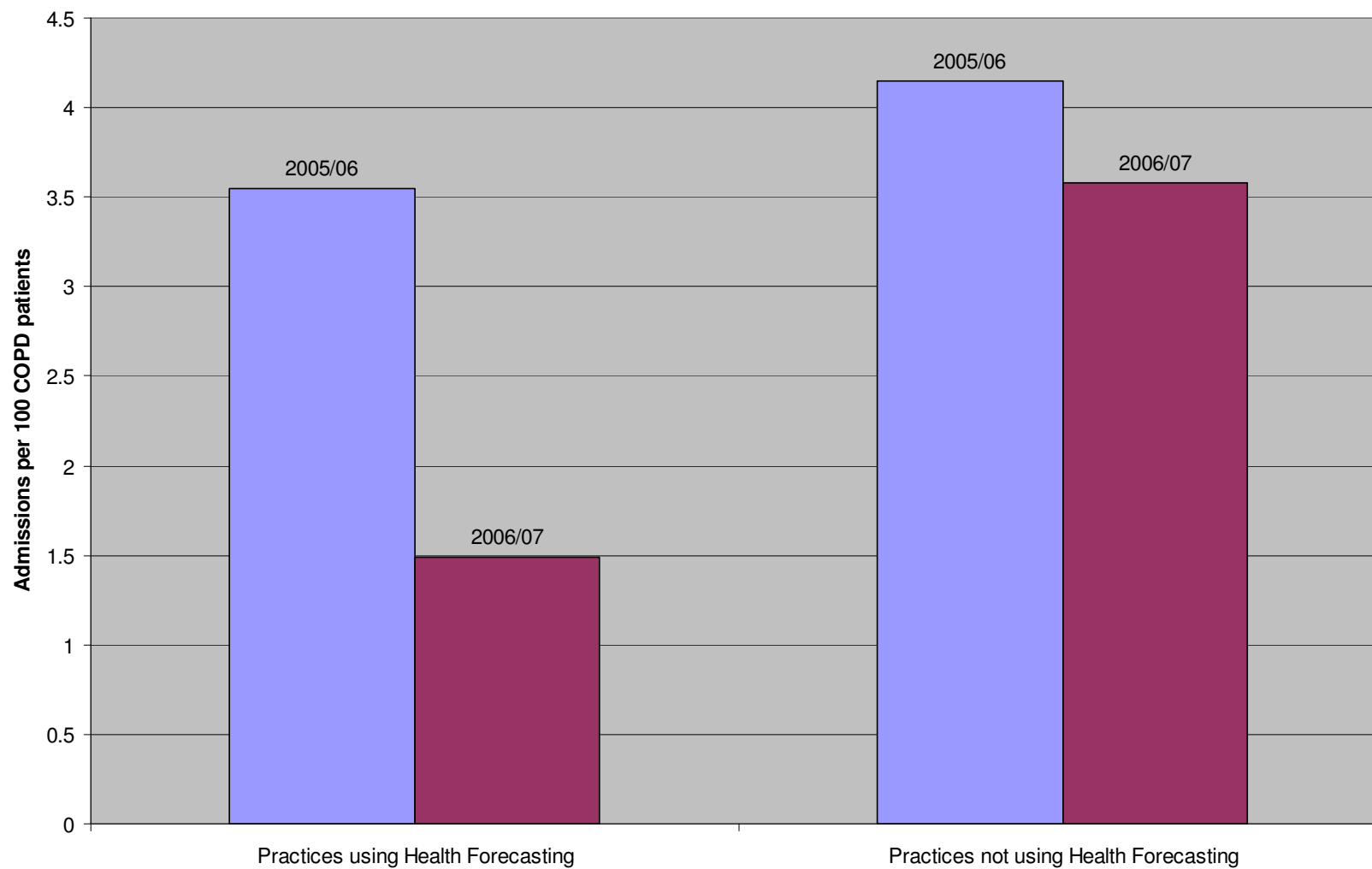
Analysis of Calls



# Comparison of hospital admissions



Comparison of hospital admissions



**COPD admission rates were 59% lower in practices that took part compared with those that did not.**

**COPD admissions were down by 58% compared to last winter in practices that took part compared with only 14% in those that did not**

**Cornwall PCT could save up to £300,000 per winter**

**Potential national savings of £35 million per winter**

**302 completed questionnaires as of April 4<sup>th</sup>, 2007**

## **How helpful were calls?**

89% said calls were helpful (62% very, 27% fairly)

11% said calls were not helpful (7% not, 4% not at all)

## **Actions in response to call**

30% consulted patient pack

19% consulted their doctor

53% obtained a repeat prescription

- “A very helpful and informative service”
- “The phone call is clear and simple to follow. It gives useful advance warning of atmosphere problems. I find it very useful and am grateful for this service.”
- “The calls are very helpful and enable me to get prepared for worsening weather. Thank you so much, it’s really reassuring to have these calls.”
- “If I didn’t get the calls, I would most probably just have carried on as usual and would not have got my prescription renewed. Your service is a great one! Thank you.”



- Stress free! All automatic
- Much less work than anticipated especially with follow up calls
- Takes onus off surgery to check up on all patients and lets us concentrate on more severe patients
- Cost effective
- Good system and easy to use

Successful service pilot with 445 patients involved

Helped reduce COPD hospital admissions by delivering a forecast direct to those who need it

Delivers real benefit by helping keep people well

Cost effective - generating cost savings up to 3.5 times greater than the projected costs

Renew contract in Cornwall to provide service to at least half of all COPD patients

Sell this service to other PCTs in England, and to primary care in Wales and Scotland

Begin international expansion with pilot in Finland in winter 2007-08

Undertake Randomised Controlled Trial in 2008-09

Develop similar services for other conditions