# An Outcomes Strategy for COPD and Asthma:

*NHS Companion Document*

*IMPACT REPORT*

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# An Outcomes Strategy for COPD and Asthma:

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# Contents

# Introduction

## Problem under consideration

### Background – COPD and asthma

1. COPD is a disease of the lungs that is characterised by airflow obstruction or limitation. It is now the most widely used term by clinicians for the conditions in patients with airflow obstruction who were previously diagnosed as having chronic bronchitis or emphysema or chronic unremitting asthma. The airflow obstruction is usually progressive, not fully reversible (unlike asthma) and does not change markedly over several months. It is treatable, but not curable; early diagnosis and treatment can markedly slow decline in lung function and hence lengthen the period in which a patient can enjoy an active life.

2. COPD kills about 23,000 people a year in England.[1] Recent figures showed that COPD accounted for 4.8% of all deaths in England between 2007 and 2009.[2] It is the fifth biggest killer disease in the UK. Numbers of deaths from COPD increase with age, as the lungs become more obstructed over time. There are around 835,000 people currently diagnosed with COPD in the UK and an estimated 2,200,000 people with COPD who remain undiagnosed, which is equivalent to 13% of the population of England aged 35 and over.[3]

3. Asthma is a long-term condition that affects the airways in the lungs. Classic symptoms include breathlessness, tightness in the chest, coughing and wheezing. The goal of treatment is for patients to be free of symptoms, and able to lead a normal, active life. This is not a condition involving gradual deterioration over time, so the aim is to achieve this goal in as many patients as possible. The causes of asthma are not well understood, so prevention of asthma is not currently possible. Patients with asthma have different triggers for symptoms, and need to get to know what will provoke their asthma and cause deterioration in their control.

4. The prevalence of asthma in England is among the highest in the world. The Quality and Outcomes Framework (QoF) prevalence figures suggest that approximately 5.9% of the English population have asthma (2008), and estimates of prevalence range from 3-5.4 million being affected by asthma. Deaths from asthma have plateaued at between 1000 and 1200 deaths a year since 2000, yet it is estimated that 90% of deaths are associated with preventable factors. Almost 40% of these deaths are in the under 75-age group. Asthma is responsible for large numbers of hospital admissions, the majority of which are emergency admissions. Lack of early and accurate diagnoses is due to a number of factors discussed below.

### The Outcomes Strategy for COPD and Asthma

5. In response to a growing recognition in England of respiratory disease as a challenge to public services – including the 2001 British Thoracic Society report *Burden of Lung Disease*[4], and the British Lung Foundation's campaign to make COPD a national priority

– a consultation document on a national strategy for COPD was published in February 2010.

6. Following the consultation process, and taking into account the new Government's proposals for reforming health and social care services, the *Outcomes Strategy for COPD and Asthma* (hereafter referred to as the *Outcomes Strategy*) was published in July 2011. The *Outcomes Strategy* set the overall high-level direction for the NHS, public health and social care services for improving COPD and asthma outcomes.

**The NHS Companion Document**

7. This *NHS Companion Document* describes the actions and interventions the NHS specifically can take to help achieve the outcomes relevant to the NHS set out in the Outcomes Strategy.

8. The *NHS Companion Document* is not mandatory, but rather describes best practice in achieving improved outcomes. It should support the work already started by the NHS in response to the *NHS Operating Frameworks 2011/12* and *2012/13*, which called on the NHS to implement the recommendations in the *Consultation on a strategy for services for COPD in England* and the *Outcomes Strategy for COPD and Asthma* respectively.

9. The *NHS Companion Document* is also aimed at helping the NHS work towards the relevant indicators set out in the NHS Outcomes Framework, e.g. 'Under 75 mortality from respiratory disease'.

**Rationale for intervention**

10. The public expects appropriate, integrated services planned and delivered around individual needs, from diagnosis to end-of-life. The *Outcomes Strategy for COPD and Asthma* sets high-level objectives for the NHS, public health and social care to deliver these. The *NHS Companion Document* describes how the NHS can play its part in delivering on these objectives, through various interventions and actions. Generally these fall into the categories of best practice information provision, providing suitable incentives, and ensuring appropriate system mechanisms are in place (eg regulatory, commissioning and payment incentive mechanisms).

11. Alongside the development of the *Outcomes Strategy* and the *NHS Companion Document*, the Department of Health and others have undertaken a series of measures to promote improvements in COPD and asthma services. This includes the Department of Health supporting improvements to COPD services through the *NHS Operating Framework*, and through the inclusion of relevant indicators in the Public Health, NHS and Social Care Outcomes Frameworks, and NICE publishing a Quality Standard on COPD, with a NICE Quality Standard on Asthma in the pipeline.

12. However, further advances will be made only if the NHS continues to make improvements against the objectives set out in the *Outcomes Strategy*. The *NHS Companion Document* is intended as guidance to support commissioners and providers during the current transitional period, prior to the NHS Commissioning Board (NHSCB) and clinical commissioning groups (CCGs) taking on their commissioning

responsibilities from April 2013 onwards. The NHSCB may choose to publish its own guidance in due course to reflect these new commissioning arrangements.

**Policy objective**

13. The *Outcomes Strategy for COPD and Asthma* together with the *NHS Companion Document* are intended to:
    - Describe high-level objectives for the provision of high-quality public health, NHS and social care services for COPD and asthma to healthcare professionals and the public, including those diagnosed with COPD and asthma
    - Advise how local communities can prevent people from getting COPD and asthma, understand the risks of having poor lung health, secure improvements to the identification, diagnosis and care of people with COPD and asthma, and reduce health inequalities
    - Support people with COPD and asthma, and their carers, by offering practical advice and education on management of their disease.
    - Provide advice and support to commissioners (in public health, NHS and social care), and primary, secondary and community care professionals.

14. The *Outcomes Strategy* and the *NHS Companion Document* support existing clinical guidelines from NICE (including the NICE Quality Standard for COPD and the NICE clinical guideline for COPD) and the British Thoracic Society (BTS).

15. The overall policy objectives of the *Outcomes Strategy* and the *NHS Companion Document* are as follows:
    - Objective 1: To improve the respiratory health and well-being of all communities and minimise inequalities between communities.
    - Objective 2: To reduce the number of people who develop COPD by ensuring they are aware of the importance of good lung health and well-being, with risk factors understood, avoided or minimised, and proactively address health inequalities.
    - Objective 3: To reduce the number of people with COPD who die prematurely through a proactive approach to early identification, diagnosis and intervention, and proactive care and management at all stages of the disease, with a particular focus on the disadvantaged groups and areas with high prevalence.
    - Objective 4: To enhance quality of life for people with COPD, across all social groups, with a positive, enabling, experience of care and support right through to the end of life.
    - Objective 5: To ensure that people with COPD, across all social groups, receive safe and effective care, which minimises progression, enhances recovery and promotes independence.
    - Objective 6: To ensure that people with asthma, across all social groups, are free of symptoms because of prompt and accurate diagnosis, shared decision making regarding treatment, and on-going support as they self manage their own condition to reduce need for unscheduled health care and risk of death.

**Description of options considered (including do nothing)**

16. We have identified two options:
    - Status quo – do nothing

- Publish good practice guidance for the NHS following the *Outcomes Strategy for COPD and Asthma*

17. The first option (of doing nothing and maintaining the status quo) is not a sustainable course of action. If current inefficiencies in COPD and asthma services persist, there will be significant additional cost pressures, due to higher incidence and prevalence, and sub-optimal patient outcomes, including greater levels of disability and dependence.

18. The second option is preferred. The *Outcomes Strategy* represents a comprehensive approach to COPD and asthma services which will maximise potential benefits. The *NHS Companion Document* provides best practice advice and guidance to the NHS on how they can meet the objectives set out in the *Outcomes Strategy*. Neither the *Outcomes Strategy* nor the *NHS Companion Document* are prescriptive, and recognise that local areas will develop their services in line with local circumstances and priorities. The *NHS Companion Document* suggests models for service improvement, but local areas will be free to explore how they can best create high-quality COPD and asthma services.

# Impact of actions and interventions outlined in the NHS Companion Document

19. In the *NHS Companion Document*, actions and interventions are set out that describe how the NHS can improve outcomes for people with COPD and asthma. These are set out in separate COPD and asthma chapters, and, within each chapter according to the five domains of the NHS Outcomes Framework.

20. Taken as a whole, the *NHS Companion Document* describes best practice across the whole pathway for both COPD and asthma, based on the current evidence base. It is important that a whole pathway approach to COPD and asthma care is taken and adopted locally by commissioners and providers if they want to see real improvements made to the quality of services and the impact that has on the lives of people with COPD and asthma.

21. We recognise, however, that local services may not be able to implement a whole pathway in one go and also that services across the country will be at different stages of implementation. We recognise as well that some of the actions and interventions we have outlined will have greater impact than others, both in terms of costs and benefits. This impact report therefore sets out a phased approach to implementation, on the understanding that implementing key actions first will have a greater impact on outcomes and also release savings that can be reinvested into implementing further service improvements across the pathway.

22. Whilst this sets out suggested models for service improvement, local areas are free to explore how they can best create high-quality services for people with COPD and asthma.

23. According to a phased implementation approach, this impact report divides the actions into four groups. These are:

**(A) COPD**

**(i) Five key actions**

Many of the measures in the *NHS Companion Document* will help the NHS to meet the quality and productivity challenge. Those that have the greatest effect include:

(i) Pulmonary rehabilitation
(ii) Self-management
(iii) Assessment and provision of home oxygen
(iv) Early discharge from hospital
(v) Non-Invasive ventilation (NIV)

**(ii) Other actions that are supported by the NICE Quality Standard and NICE Clinical Guideline for the management of COPD**

**(iii) Other actions**

**(B) Asthma**

# Summary of costs and benefits

## COPD

### Five key actions

25. The overall ten year estimated cost savings of the five key actions are:
    i. Pulmonary rehabilitation - £119 million (£141m undiscounted)
    ii. Self-management - £235 million (£282m undiscounted)
    iii. Assessment and provision of home oxygen - £19.6 million
    iv. Early discharge from hospital - £34 million (£39m undiscounted)
    v. Non-Invasive ventilation (NIV) - £9 million (£10.5m undiscounted)

26. Therefore, overall, if the NHS were to implement the five key best practice actions, the NHS would save an estimated £416 million (discounted) over a ten-year period.

### Other actions that are supported by the NICE Quality Standard and NICE Clinical Guideline for the management of COPD

27. On an opportunity cost basis, the estimated recurrent costs to implementing the NICE Clinical Guideline, which these actions from the NHS Companion Document are based on, would be £86.4m (actual costs multiplied by 2.4). The number of QALYs required to make this cost-effective for the NHS would be 1,440 (at £60,000 per QALY). This is a very modest number compared to, for example, the number of avoidable deaths for COPD each year.

### Other actions

28. These actions are not all costed, but the actions are estimated to make improvements to outcomes and patient experience of care.

## Asthma

29. The asthma actions from the *NHS Companion Document* are not costed in this impact report, but are based on the British Asthma Guideline (as set out in detail below). This is the Guideline that is being used to base the NICE Quality Standard for Asthma on (currently in development) and is NHS Evidence-accredited.

**30. The *NHS Companion Document* is not mandatory for the NHS but sets out best practice for improving outcomes. Local areas are free to explore how they can best create high-quality services for people with COPD and asthma. Where we have been able to provide detailed costings for actions in this impact report, this is intended to provide a useful resource for NHS services looking to implement the actions locally.**

# Detailed analysis of costs and benefits

## COPD

## Five key actions

- Pulmonary rehabilitation
- Self-management
- Assessment and provision of home oxygen
- Early discharge from hospital
- Non-Invasive ventilation (NIV)

31. The text below shows the impact of implementing these five key actions. Under each action is shown the estimated annual net cost and the estimated ten-year net cost of implementing it. For each of these actions, the cost is negative, implying overall cost benefits.

## Pulmonary rehabilitation

***What can the NHS do to improve outcomes?***
***"Provide pulmonary rehabilitation for all people with COPD with an MRC score of 3 or above."***

**What is the problem?**

32. People with COPD develop progressive and irreversible airways narrowing that is associated with muscle weakness, causing breathlessness and reduced capacity for activity. This results in respiratory disability, especially in those with more severe disease, and a corresponding increase in dependence on health and social care resources.

32. Formal pulmonary rehabilitation (PR) programmes are not universally available across England and are not provided by all PCTs.

**Recommendation to address the problem.**

33. For those with moderate or more advanced COPD, PR is an essential part of the non-pharmacological treatment pathway. PR refers to a combination of supervised exercise training with a comprehensive education programme and psychological support aimed at changing behaviour. There is very strong evidence that it improves exercise tolerance and health-related quality of life, as well as reducing breathlessness and an individual's use of the healthcare system.[5]

**Assessment of costs and benefits**

34. All costs below relate to the provision of formal PR.

**Context**

35. It is necessary to model the additional costs and benefits of the policy proposal and therefore the following is set out:
    - assumptions and available data on the current service provision or baseline of PR services for individuals with COPD;
    - assumptions made and interpretation of future service provision, as set out in the *Outcomes Strategy for COPD and Asthma*, in terms of costs and benefits; and
    - the methodology for estimating the potential additional impact.

**Baseline assumptions**

36. The *NHS Companion Document* suggests that all people with COPD with an MRC score of 3 or above should be eligible for PR, which implies around 716,000 patients.

37. There is limited data on the baseline level of service provision of PR, and there appears to be regional variation. The assumptions about current service provision and usage are taken from Royal College of Physicians (RCP) audit data on the reported number of eligible patients receiving pulmonary rehabilitation.[6]

| **PR provision** | **Estimated percentage of units (a unit is defined as a hospital that admits acute unselected emergency admissions)** |
|---|---|
| Full provision | 58% |
| Partial provision (i.e. provision for some eligible patients) | 32% |
| No provision | 10% |

38. It is assumed that there is currently unmet need for PR in 10% of eligible COPD patients (~72,000). Therefore the focus of the cost–benefit analysis is the additional impact of increased PR provision for this group.

**Intervention assumptions**

39. There is limited evidence on the detailed costs and benefits of PR, but two main papers were used to calculate the impact.[7] The analysis is based largely on the figures quoted in the Griffiths et al. study of 2001, and uprated to 2009 prices. The Griffiths study focuses on PR for people with moderate, severe and very severe COPD, which is in line with the *NHS Companion Document*.

40. The estimated unit cost of PR is **£990** per patient. It should be recognised that this cost includes staff costs (occupational therapist, consultant, senior physiotherapist, senior dietician, clerical co-ordinator, therapy helper and respiratory nurse specialist), transport costs, equipment, consumables and overhead allowance.

41. Cost savings per patient were derived by comparing the total healthcare costs of individual patients in the PR group (-£2,300) and the control group (-£2,500). The total healthcare costs include the intervention costs, GP home visits, visits to the GP surgery

and hospital admissions. The estimated net cost saving per patient receiving PR is **£210**.

42. The Griffiths et al (2001) study also reported the QALY gain of the PR group (0.38) and control group (0.35). This suggests an incremental QALY gain of 0.03 QALYs per PR patient. The Department of Health values a life year at £60,000, which implies a monetised health gain per PR patient of **£1,800**.

43. It assumed that expansion of PR services will be phased over three years, from a 33% expansion in year one, 66% expansion in year two and 100% in year three.

**Summary of costs and benefits**

44. In summary, the average annual cost of extending the provision of PR is estimated to be £155 million (£1,553 million over ten years), including the healthcare costs associated with patient service usage. At the baseline (i.e. without PR), the estimated average annual healthcare costs are around £169 million per year (£1,694 million over ten years). This implies a total ten-year (undiscounted) estimated net cost of the recommendation of **-£141 million**, with an average annual net cost of **-£12.1 million**.

45. The estimated total monetised health benefit of providing PR to new COPD patients is £1,203 million which provides a net benefit of **£1,344 million**.

# Self-management

***What can the NHS do to improve outcomes?***
***"Ensure people with COPD are offered support to self-manage their condition."***

**What is the problem?**

46. People with COPD want information, advice, education and support. Many will want to understand their condition in detail. Those who do should be encouraged to take 'ownership' of their condition and thus feel more confident in managing it. The concept that works well in other disease areas is that of the 'expert patient': people have a wealth of educational materials, advice and support that helps them with every aspect of their disease from recognising and acting on symptoms through to developing strategies to deal with the psychological consequences of illness. Other aspects of education and support which are effective but not routinely utilised include the development of personalised care plans (personalised care planning means that people with COPD should be offered a discussion about their condition, what is important to them and what their goals are). They should also be offered information and support for self-care.

**Action to address the problem**

47. Information, advice, education and support should be widely available for people with COPD. This involves more widespread access to expert patients programmes, offering

everyone with COPD a personalised care plan, and supporting people with COPD to self-care.

48. The aim of care plans and self-care support is to prevent exacerbations through lifestyle adaptation and to allow people to acquire the skills to treat their exacerbation at an early stage. Turnock et al (2005) systematically reviewed the literature comparing action plans with the usual care for COPD.[8] From the three studies included, there was no evidence of any effect on healthcare utilisation, health-related quality of life, lung function, functional capacity, symptom scores, mortality, anxiety and depression. Evidence of a positive effect was detected in one primary (medication usage) and one additional outcome (self-management). The number of exacerbations, length of exacerbations and days lost from work were not recorded as outcomes in any of the trials.

49. There have been studies into the cost-effectiveness of several self-care interventions (such as self-care training courses). The results of the studies are not conclusive but there is growing evidence for many interventions that indicates that they are either cost neutral or represent net benefits. The document 'Research evidence on the effectiveness of self-care support' provides a detailed summary of available evidence on a number of self-care interventions.[9]

**Assessment of costs and benefits**

**General assumptions**

50. The costs and efficiency savings outlined in this recommendation are for individuals with COPD among other possible long-term conditions (e.g. diabetes, asthma). Self-management interventions for people with COPD with co-morbidities (approximately 30% of patients) may be met through another long-term condition area and not necessarily be a consequence of the *Outcomes Strategy for COPD and Asthma*. However, any benefits (efficiency savings) will help those with COPD.

51. For the analysis, it is assumed individuals with a care plan are excluded from the incremental impact associated with self-care support (outlined below). This implies that individuals eligible for self-care support are those without a care plan.

**Care plans**

52. It is estimated that 60% of people with COPD have a care plan in place for managing their condition.[10] The take-up of care plans is expected to improve as a consequence of the *Outcomes Strategy for COPD and Asthma*, due to the enhanced management of COPD patients through interventions such as regular reviews. The take-up of care plans for COPD patients is estimated to improve gradually.

| 2009–10 | 2010–11 | 2011–12 | 2012–13 | 2013–14 | 2014–15 |
|---|---|---|---|---|---|
| 68% | 73% | 76% | 80% | 85% | 95% |

**Costs**

53. Costs and benefits for care planning were originally estimated in a Department of Health impact assessment.[11] Costs of care plans were calculated on the basis of discussions with people implementing care planning and how much time it takes to set up a care plan for people needing different levels of care. The average cost of a care plan is estimated to be £18.

**Efficiency savings**

54. Department of Health analysis of the relationship between the GP patient survey and hospital episode statistics showed that a one-percentage point increase in the number of people with a long-term condition with a care plan is associated with 11,400 fewer emergency admissions, 126,000 fewer outpatient attendances, and an additional 3,700 elective admissions. Applying this information to people with COPD suggests that the impact per person is as follows

| Impact | Average cost* | Annual costs saving per 1% increase in care plans |
|---|---|---|
| Emergency admissions | £1,576 | £117 |
| Outpatient | £98 | £80 |
| Elective | £1,576 | -£38 |
| **Total** | | **£159** |

*Weighted average from NHS Reference Costs 2006-07.

55. This implies a net annual cost saving per care plan of £141 (i.e. £159 less £18 for cost a care plan).

**Non-monetised benefits**

56. The qualitative and non-quantifiable benefits associated with care plans include:
- A reduction in the use of primary and secondary care (including reduction in GP visits, inpatient admissions, emergency admissions, outpatient appointments, emergency bed days);
- Better use of health information leading to reduction in pain, disabilities, anxiety and depression; and
- Improvement in quality of life and increase in life expectancy

**Risks**

57. Some potential risks to delivery are notes:
- Lack of demand for self-care support by people with COPD; and
- Lack of mechanisms for incentivising the NHS to adopt universal care planning

**Self-care support**

58. As outlined previously, only patients with no care plan are considered eligible for self-care support (in this analysis). It is estimated that around 178,000 (23%) of people with

COPD are eligible for self-care support, but over time this group is expected to reduce as more people take up care plans. At the baseline, it is estimated that approximately 20% of people with COPD receive some level of self-care support.

**Costs**

59. There are three elements to the cost of self-care support: the cost of the self-care support interventions (providing information, skills training), the costs of a health professional's time discussing self-care options, and the costs of providing information about self-care options.

60. Costs on self-care interventions are taken from a range of studies, and data comes from a range of providers. This suggests that providing information costs around £50 per patient per year and that a six-week skills training course of two hours per week costs £200 (including training materials for course participants and training costs for volunteer trainers). The cost of providing self-care support advice is assumed to be three minutes of a GP/practice nurse's time, an average cost of £6. This gives an estimated weighted average cost per person of £77.

61. The cost savings stem from patients better managing their condition and thereby reducing their demand for healthcare services. Evidence outside the COPD area suggests that this relationship is possible.[12] Savings are known to differ by the level of patient need. It is assumed that low-intensity users make up 70% of COPD patients, medium-intensity users make up 25%, and high-intensity users make up the remaining 5%. Department of Health analysis (using the 2006 General Household Survey) estimates the impact of self-care support on health service usage as follows.

| | | **Reduction in service use** | | |
|---|---|---|---|---|
| **Service** | **Cost per visit** | **Low-intensity users** | **Medium-intensity users** | **High-intensity users** |
| GP visits | £34 | 32% | 36% | 40% |
| Outpatient | £98 | 39% | 44% | 49% |
| A&E | £83 | 32% | 36% | 40% |
| Inpatient | £1,576 | 26% | 29% | 32% |
| **Savings per person** | | **£185** | **£293** | **£559** |

62. Under the assumptions outlined, the estimated average annual net saving per patient is £120.

**Non-monetised benefits**

63. The qualitative and non-quantifiable benefits associated with self-care include:
- a reduction in the use of primary and secondary care (including reduction in GP visits, inpatient admissions, emergency admissions, outpatient appointments, emergency bed days);
- better use of health information leading to reduction in pain, disabilities, anxiety and depression; and
- improvement in quality of life and increase in life expectancy.

**Summary of efficiency savings**

| | Net savings (£m) | | | | | |
|---|---|---|---|---|---|---|
| | **2010/11** | **2011/12** | **2012/13** | **2013/14** | **2014/15** | **2015/16*** |
| Care planning | £8 | £13 | £16 | £17 | £18 | £29 |
| Self-care | £2 | £3 | £5 | £7 | £8 | £8 |
| **Total** | **£10** | **£16** | **£21** | **£24** | **£26** | **£37** |

*Net savings for 2016/17 to 2019/20 are assumed to be the same as those in 2015/16.

# Assessment and provision of home oxygen

***What can the NHS do to improve outcomes?***
***"Ensure routine pulse oximetry in people with COPD whose FEV1 is lower than 50% predicted to identify those who may need long-term home oxygen therapy and, for those identified, ensure structured assessment of need by a home oxygen assessment and review service."***

**What is the problem?**

64. People with severe COPD can have very low oxygen levels in their blood, and may need assistance with the use of oxygen at home. Figures provided to the Department of Health suggest that around 30% of people prescribed oxygen either derive no clinical benefit from it or do not use their oxygen. Once prescribed, there is no requirement to review people's use of home oxygen.

**Action to address the problem**

65. It is important that people are properly prescribed oxygen and, once prescribed, that they receive a good quality and effective service that provides value for money.

**Assessment of costs and benefits**

66. Detailed cost modelling has been carried out by Frontier Economics to accompany the Department's Commissioning Toolkit for COPD (which includes home oxygen assessment and review services). This will be published shortly.

67. In summary, this analysis shows that significant net cost savings can be achieved by adopting assessment and review (A&R) for Home Oxygen Services. The analysis is based on estimated new contract prices, i.e. it doesn't include potential cost savings from moving to new contracts. A summary of the analysis is shown in the following table:

**Estimated Costs for Home Oxygen Assessment and Review Service for Impact Statement**
**(based on Frontier Commissioning Tool)**

**National Aggregate**

| **Discounted** | **Total over 10 years** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Cost Savings for HO | **-95,360,278** | -2,038,989 | -9,428,631 | -11,250,593 | -11,214,085 | -11,138,241 | -10,761,585 | -10,397,667 | -10,046,055 | -9,706,333 | -9,378,100 |
| Cost of A&R | **67,389,474** | 6,838,919 | 7,724,418 | 7,424,878 | 7,174,035 | 6,931,435 | 6,697,038 | 6,470,568 | 6,251,757 | 6,040,345 | 5,836,082 |
| **Net Cost Saving** | **-27,970,804** | **4,799,930** | **-1,704,213** | **-3,825,715** | **-4,040,050** | **-4,206,806** | **-4,064,547** | **-3,927,099** | **-3,794,298** | **-3,665,989** | **-3,542,018** |

(Costs and cost savings are discounted by 3.5% per year).

68. This analysis assumes that all PCTs adopt A&R starting in 2012. However, it is estimated that approximately 30% of PCTs have already adopted A&R. So the net cost saving of £28.0m over ten years has been scaled down to **£19.6m**. In practice, it is likely that the adoption of A&R and these savings will take a year or two to implement.

69. Benefits for the A&R service for home oxygen have not been estimated. However it is likely that there will be health benefits from regular review of the need for the oxygen service, and from the prescribing of more appropriate oxygen services.

# Early discharge from hospital

***What can the NHS do to improve outcomes?***
***"Ensure all people with COPD are assessed for suitability for an Early Supported Discharge Scheme."***

### What is the problem?

70. Early discharge schemes or hospital at home can prevent hospital admission, and provide the person and carer with all the support they require.[13]

71. However, coverage across the country is patchy - approximately 59% of respiratory units have Early Supported Discharge Schemes.[14]

### Action to address the problem

72. Ensuring that all people with COPD in hospital are assessed for an Early Supported Discharge Scheme.

### Assessment of costs and benefits

### Baseline assumptions

73. It is estimated that there are 94,000 hospital admissions for COPD exacerbations each year. Currently, each year an estimated 18% (17,000) of COPD exacerbation admissions are placed on an early discharge scheme, sometimes referred to as Hospital at Home.[15]

### Intervention cost and assumptions

74. It should be recognised that not all COPD patients will be eligible for early discharge because of, for example, the severity of their exacerbation or other health problems. It is estimated that approximately a quarter of all COPD admissions for an exacerbation should be eligible for early discharge schemes.[16] Compared with the baseline, this implies that there is a potential to increase the number of admissions placed on the early discharge scheme by seven percentage points, or 7,000 admissions.

75. The early discharge scheme involves a specialist nurse visiting a COPD patient's home over a period of approximately eight days to provide support. It is assumed that each specialist nurse visit lasts 20 minutes and there is an average of 3.8 visits, giving an estimated staff cost of £105 per patient.[17] [18]

76. COPD patients on the early discharge scheme may be given medication (for example antibiotics, corticosteroids, nebulised bronchodilators) and possible temporary oxygen to aid their recovery.[19] It is assumed that all patients accepted onto the scheme will receive these at an estimated combined cost of £80 per patient.[20] Hence, overall the cost of providing the early discharge scheme is approximately £185 per patient. Before a COPD patient is considered for an early discharge scheme they would have received support in hospital to stabilise and assess their condition. It is assumed that a patient eligible for the scheme would have an average length of stay of around 1.5 days at a cost of £526.[21]

77. This implies that the total cost generated by an early discharge COPD patient is approximately £710. It is assumed that previously the 7,000 annual admissions would have an average length of stay of around five days at a cost of £1,288.[22] This figure used is for a COPD patient who could potentially be considered stable enough for an early discharge scheme (i.e. no non-invasive ventilation (NIV) required or complications). In summary, for each additional COPD patient placed on the early discharge scheme it costs £710, as opposed to £1,288 if they were to remain under hospital care. Hence there is a cost saving of around £580 per COPD patient, and a bed-day saving of three days.

### Evidence on the effectiveness of early discharge schemes

78. Several studies have reported that there is no statistically significant difference between standard care and early discharge schemes for COPD patients in terms of readmissions, mortality, health-related quality of life, GP visits and increased carer support.[23] All of the studies were conducted over an eight-week period after the initial exacerbation. Therefore, it is possible to conclude that early discharge schemes have no adverse impact on the health of the patient or on health resources. It should be noted that a number of studies have reported high patient satisfaction with the early discharge scheme.[24]

### Summary of costs and savings

79. In summary, the average annual cost of extending early discharge schemes for COPD patients is estimated to be £4.8 million (£48.7 million over ten years). At the baseline (i.e. without early discharge schemes), the estimated average cost is around £8.8 million

per year (£88 million over ten-years). This implies that the total ten-year (undiscounted) estimated net cost of the action is **-£39 million** (-£35 million – -£43 million), with an average annual net cost of **-£3.9 million**. It should be noted that the efficiency savings are achieved through an estimated annual bed reduction of 21,000 bed days.

# Non-Invasive Ventilation (NIV)

***What can the NHS do to improve outcomes?***
***"Ensure prompt assessment on admission to hospital, including blood gas analysis and provision of NIV within one hour of decision to treat being made, where clinically indicated."***

**What is the problem?**

80. According to a Royal College of Physicians audit, some hospitals that treat people with COPD have little or no access to NIV.[25]

**Action to address the problem**

81. For those with severe COPD, use of a nasal or face mask can improve breathing and quality of life, while reducing costs, and it is therefore important to identify quickly those who would benefit from this approach, which can be provided on specialist wards and therefore does not incur the cost of intensive care admission. Prompt assessment for NIV is therefore necessary.

**Assessment of costs and benefits**

82. It is estimated that there are 94,000 hospital admissions for COPD exacerbations each year. The RCP audit (2008) found that of COPD patients admitted to hospital (non-elective), 11% received NIV and 1% received invasive ventilation (IV).[26]

83. The criterion for when ventilatory support should be required is based on national guidelines: "NIV should be considered in all patients with an acute exacerbation of COPD in whom a respiratory acidosis (pH <7.35 PaCO2 >6kPa) persists, despite immediate maximum standard medical treatment on controlled oxygen therapy for no more than 1 hour."[27]

84. The RCP audit (2008) reported that 22% of COPD patients admitted to hospital (non-elective) had pH <7.35 at some time during their admission. Using the estimate for annual hospital admissions for COPD exacerbations, it implies that there are approximately 21,000 admissions where an assessment for ventilatory support should be undertaken. Of COPD admissions with pH <7.35, the RCP audit (2008) reported that approximately 50% (10,000) received either NIV or IV. Hence an estimated 11,000 admissions were candidates for ventilatory support, according to national guidelines, but did not receive either NIV or IV.

**Summary of costs and savings**

85. In summary, the average annual cost of extending NIV for COPD patients is estimated to be £3.4 million (£34 million over ten years). At the baseline (i.e. without NIV) the

estimated average cost is around £4.5 million per year (£45 million over ten years). This implies that the total ten-year (undiscounted) estimated net cost of the recommendation is **-£10.5 million** (-£9.5 million – -£11.5 million), with an average annual net cost of **-£1.5 million**.

# (ii) Other actions that are supported by the NICE Quality Standard and NICE Clinical Guideline for the management of COPD

86. NICE has produced a Quality Standard for COPD (summarised in Annex 1) and a clinical guideline for COPD (101, February 2011)[28]. These are supported by a costing report.[29] Evidence tables for the studies included are also available.[30]

87. The costs and cost savings of the NICE clinical guideline for COPD were estimated as follows (p5):

**Estimated recurrent costs of implementation**

| Recommendation | Costs (£000s ) | Costs/ −savings(£000 s) |
|---|---|---|
| Current estimated cost of prescribing | 268,543 | |
| Predicted future cost of prescribing | 320,030 | |
| **Incremental cost of prescribing** | | **51,487** |
| Current estimated cost of hospital admissions | 310,413 | |
| Predicted future cost of hospital admissions | 294,892 | |
| **Incremental saving for hospital admissions** | | **−15,521** |
| **Total incremental cost** | | **35,966** |

88. The health benefits were not estimated by NICE. However, we can estimate the number of Quality Adjusted Life Years (QALYs) that would be required for the intervention to be cost-effective. On an opportunity cost basis, the estimated recurrent costs would be £86.4m (actual costs multiplied by 2.4). The number of QALYs required would be **1,440** (at £60,000 per QALY). In other words, we would need 1,440 QALYs for this to be cost-effective. This is a very modest number compared to, for example, the number of avoidable deaths for COPD each year.

**The detailed list of actions from the NICE Companion Document that are covered by the NICE Quality Standard for COPD[1] and NICE clinical guideline for COPD are as follows:**

89. ***Identify people whose treatment history and symptoms suggest that COPD may have been missed, and those currently diagnosed with COPD without a clear diagnosis***
The following recommendation from the NICE clinical guideline for COPD is considered by NICE to be a priority for implementation: “A diagnosis of COPD should be considered in patients over the age of 35 who have a risk factor (generally smoking) and who present with exertional breathlessness, chronic cough, regular sputum production, frequent winter ‘bronchitis’ or wheeze.”

[1] Actions listed in the ‘five key actions’ may also be included in the NICE Quality Standard for COPD and the NICE Clinical Guideline

Also QS1: “People with COPD have one or more indicative symptoms recorded, and have the diagnosis confirmed by post-bronchodilator spirometry carried out on calibrated equipment by healthcare professionals competent in its performance and interpretation.”

90. ***Perform quality-assured diagnostic spirometry on those identified and confirm diagnosis, together with other investigations to assess severity and coexistence of other conditions***
QS1: “People with COPD have one or more indicative symptoms recorded, and have the diagnosis confirmed by post-bronchodilator spirometry carried out on calibrated equipment by healthcare professionals competent in its performance and interpretation.”
QS4: “People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities”

91. ***Assess for disease severity and other complicating factors***
QS1: “People with COPD have one or more indicative symptoms recorded, and have the diagnosis confirmed by post-bronchodilator spirometry carried out on calibrated equipment by healthcare professionals competent in its performance and interpretation.”
QS4: “People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities”

92. ***Ensure people with COPD receive evidence-based treatment***
According to the NICE clinical guideline for COPD.

93. ***Offer appropriate smoking cessation support to people with COPD who smoke***
This is covered by the Tobacco Control Plan and NHS Stop Smoking Services.

94. ***Identify and treat exacerbations promptly***
QS11: “People admitted to hospital with an exacerbation of COPD and with persistent acidotic ventilatory failure are promptly assessed for, and receive, non-invasive ventilation delivered by appropriately trained staff in a dedicated setting.”

95. ***Provide proactive chronic disease management appropriate for the severity level assessed – mild, moderate or severe***
QS4: “People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities.”
QS2: “People with COPD have a current individualised comprehensive management plan, which includes high-quality information and educational material about the condition and its management, relevant to the stage of disease”

96. ***Ensure people with COPD receive evidence-based treatment in a structured medicines management approach***
According to the NICE clinical guideline for COPD.

97. ***Agree locally a pathway of care for acute exacerbations – including timing and location of initial assessment and delivery of care (hospital, GP surgery / community care, or in their own home)***
According to the NICE clinical guideline for COPD.

98. ***Ensure structured hospital admission with early access to specialist respiratory care, prompt management of COPD and co-morbidities in line with NICE guidance***
QS10: "People admitted to hospital with an exacerbation of COPD are cared for by a respiratory team".

99. ***Ensure that people admitted to hospital with an exacerbation of COPD are reviewed within two weeks of discharge***
QS12: "People admitted to hospital with an exacerbation of COPD are reviewed within 2 weeks of discharge."

100. ***Ensure all people with COPD are offered personalised information, with support to understand it, at key points throughout their care, which enables them to make choices and to fully participate in shared decision-making***
QS2: "People with COPD have a current individualised comprehensive management plan, which includes high-quality information and educational material about the condition and its management, relevant to the stage of disease"
QS7: "People who have had an exacerbation of COPD are provided with individualised written advice on early recognition of future exacerbations, management strategies (including appropriate provision of antibiotics and corticosteroids for self-treatment at home) and a named contact."

101. ***Assess the psychological needs of people diagnosed with COPD and ensure people identified with psychosocial needs are referred for appropriate treatment and support***
QS4: "People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities."

102. ***Ensure that people with COPD who have an FEV1 < 30 predicted, frequent exacerbations or a history of NIV, are assessed for end of life care needs***
QS13: "People with advanced COPD, and their carers, are identified and offered palliative care that addresses physical, social and emotional needs."

The background to QS13 states that indicative markers for people who are likely to benefit from palliative care include:
- severe airflow obstruction (FEV1 <30% predicted)
- history of two or more admissions for exacerbations during the previous year
- need for non-invasive ventilation for an acute exacerbation.

103. ***Ensure people identified with end of life care needs are referred for appropriate treatment and support***
QS13: "People with advanced COPD, and their carers, are identified and offered palliative care that addresses physical, social and emotional needs."

104. ***Identify individuals who would be at risk if they received high-flow oxygen***
QS8: “People with COPD potentially requiring long-term oxygen therapy are assessed in accordance with NICE guidance by a specialist oxygen service.”
QS9: “People with COPD receiving long-term oxygen therapy are reviewed in accordance with NICE guidance, at least annually, by a specialist oxygen service.”

105. **Risk assess the home environment of someone receiving long-term oxygen therapy to ensure that all safety requirements are in place**
QS8: “People with COPD potentially requiring long-term oxygen therapy are assessed in accordance with NICE guidance by a specialist oxygen service.”
QS9: “People with COPD receiving long-term oxygen therapy are reviewed in accordance with NICE guidance, at least annually, by a specialist oxygen service.”
Risk assessment of the home environment should be done according to the Good Practice Guide for Home Oxygen.[31]

106. ***Prescribe steroids in accordance with evidence-based guidance***
According to the NICE clinical guideline for COPD.

## (iii) Other actions

107. ***Recognise the link between COPD and lung cancer and introduce proactive strategies to diagnose earlier***
This action has not been costed, but should be assessed.

108. ***Assess for the presence of alpha-1-antitrypsin deficiency and for bronchiectasis with a suggestive history***
We have estimated annual costs of £1.2m, and benefits from 4,500 smokers with alpha-1-antitrypsin deficiency quitting over a ten-year period.

109. ***Promote regular physical activity in all people with COPD***
People with mild COPD should receive the same physical activity messages as the general population – at least 30 minutes of physical activity, five times a week. This message may need to be tailored to overcome negative expectations about physical activity, including getting out of breath. The Department of Health are running a £75 million integrated campaign called Change 4 Life to promote physical activity in the context of the prevention of obesity/overweight. The cost of the Change 4 Life programme is not covered in this impact assessment.

110. ***Identify those who may need Non-Invasive Ventilation (NIV) both in the acute setting and as a long-term domiciliary treatment, and ensure structured assessment of need for NIV is carried out by a respiratory specialist***
We estimate that that the average annual cost of extending NIV for COPD patients to be £3.4 million (£34 million over ten years), the baseline (i.e. without NIV) at around £4.5 million per year, implying an average annual net cost saving of £1.5 million.

111. ***Give those identified as high-risk an oxygen alert card***
We estimate that there would be a one-off capital cost of £320,000 spread over the first two years, i.e. £160,000 in year 1; £160,000 in year 2.

112. ***Give appropriate people steroid treatment cards***
This is not expected to be a significant cost, and would be similar to the cost of oxygen alert cards above.

# (B) Asthma

113. The following section lists the actions in the *NHS Companion Document*, noting references from the British Asthma Guideline[32] to each of the points – except for smoking where we have additionally referenced international guidelines.

114. Although the British Asthma Guideline is not a NICE guideline, NHS Evidence has approved the process by which the guideline was developed, and it is therefore 'accredited by NICE' - as of January 2012. This gives it the same status as a guideline developed by NICE.

115. A NICE Quality Standard for Asthma is currently being developed, with an expected publication date of February 2013. NICE is basing the Quality Standard for Asthma on the British Asthma Guideline.

**Introduction**

116. The *NHS Companion Document* helps commissioners and providers answer the question, 'what can the NHS do to improve outcomes for people with asthma?' in the context of the *Outcomes Strategy for COPD and Asthma* and the NHS Outcomes Framework. It suggests the best practice actions, based on the British Asthma Guideline, that the NHS can take to make improvements in the quality and outcomes of asthma services.

| Suggested action from the NHS Companion Document | Reference to the British Asthma Guideline |
|---|---|
| **Ensure clinicians diagnosing asthma have a good understanding of best practice outlined in the British Asthma Guideline, and have received adequate training in asthma management to be competent in diagnosing asthma** | 2.4 - Some training is required to obtain reliable recordings to interpret the results<br>8.1.1 - All people with asthma should have access to primary care services delivered by doctors and nurses with appropriate training in asthma management.<br>8.2 - Clinicians in primary and secondary care should treat asthma according to recommended guidelines. |
| **Include a record of the basis for diagnosis in patient notes** | 2.1.1 - Record the basis on which a diagnosis of asthma is suspected |

| | |
|---|---|
| **Investigate people developing asthma in adulthood for the possibility that asthma is being caused by the workplace** | 7.9.1 - In patients with adult onset or reappearance of childhood asthma, clinicians should be suspicious that there may be an occupational cause.<br>7.9.3 In suspected work related asthma, the diagnosis of asthma should be confirmed using standard objective criteria. |
| **Carry out regular structured reviews to ensure that control of symptoms is achieved** | 2.6.4 - Asthma is best monitored in primary care by routine clinical review on at least an annual basis. The factors that should be monitored include – symptom score/ symptomatic asthma control.<br>8.1.2 - In primary care, people with asthma should be reviewed regularly by a nurse or doctor with appropriate training in asthma management. Review should incorporate a written action plan. |
| **Support self-management and include an up-to-date personalised care plan in patients' notes, with evidence of a written asthma action plan** | 9.1 - Patients with asthma should be offered self management education that focuses on individual needs and be reinforced by written personalised action plan.<br>9.1.1 - Introduce personalised action plans as part of a structured educational discussion. |
| **Offer support to stop smoking** | 3.3.1 - Direct or passive exposure to cigarette smoke adversely affects quality of life, lung function, need for rescue medications for acute episodes of asthma and long term control with inhaled steroids. Parents with asthma should be advised about the dangers of smoking to themselves, and their children with asthma, and offered appropriate support to stop smoking.<br>4.2.4 - Current and previous smoking reduces the effect of inhaled steroids; which may be overcome with increased doses. Patients should be advised that smoking reduces the effectiveness of therapy. |
| **Stratify GP practices' asthma registers according to people's risk of an attack or of losing control** | 6.2.4 - A register of patients at risk may help primary care health professionals to identify patients who are more likely to die from their asthma. |

| | |
|---|---|
| **Ensure specialist services are available for those who need them** | 2.4.1 box 1 (p15) - Criteria for specialist referral in adults<br>6.1.3 - Good practice point – keep patients who have had near fatal asthma or brittle asthma under specialist supervision indefinitely<br>6.1.5 - Good practice point - A respiratory specialist should follow up patients admitted with severe asthma for at least one year after the admission |
| **Provide the right care in the right place at the right time** | 6.2.5 Refer to hospital any patients with features of acute severe or life threatening asthma.<br>6.2.6 Admit patients with any feature of a life threatening or near-fatal attack.<br>Annex 2 - sets out how to manage acute severe asthma in adults in general practice and when to admit to hospital (via ambulance); and when to treat at home or in surgery. |
| **Provide rapid access to specialist care when needed** | Annex 2 - sets out how to manage acute severe asthma in adults in general practice and when to admit to hospital.<br>Annex 3 - sets out management of severe acute asthma in adults in emergency department.<br>Annex 4 - sets out management of acute severe asthma in adults in hospital - specifies when ICU is needed. |
| **Follow up and review with person with asthma following hospital attendance or admission** | 8.2 - All people attending hospital with acute exacerbations of asthma should be reviewed by a clinician with particular expertise in asthma management, preferably within 30 days.<br>Annex 2 - follow up after treatment or discharge from hospital – GP review within 48 hours (bottom right of diagram).<br>Annex 3 - after ED attendance – Arrange GP follow up 2 days post-discharge…and…refer to asthma liaison nurse/ chest clinic. |
| **Ensure a shared decision-making approach to managing asthma** | 8.1.2 - Reviewing patients using a patient-centred style of consultation can lead to improved outcomes. |

| | |
|---|---|
| **Assess for psychosocial and mental health needs** | 6.1.3 - Healthcare professionals must be aware that patients with severe asthma and one or more adverse psychosocial factors are at risk of death. |
| **Ensure that the stepwise approach to prescribing, as set out in the British Asthma Guideline, is being followed** | 8.2 - Clinicians in primary and secondary care should treat asthma according to recommended guidelines. |

# Review and evaluation

117. Based on the current knowledge set out in this impact report, further research and evaluation is needed on the costs and benefits of best practice for both COPD and asthma.

# ANNEX 1: About NICE Quality Standards

NICE Quality Standards are a set of specific, concise statements and associated measures. They set out aspirational, but achievable, markers of high-quality, cost-effective patient care, covering the treatment and prevention of different diseases and conditions.

NICE Quality Standards are central to supporting the Government's vision for an NHS focussed on delivering the best possible outcomes for patients.

The primary purpose of NICE quality standards is to make it clear what quality care is by providing patients, carers and the public, health and social care professionals, commissioners and service providers with definitions of high-quality health and social care.

NICE Quality Standards are not mandatory but they can be used for a wide range of purposes both locally and nationally. For example:

- **Patients, carers and the public** can use the NICE quality standards to provide information about the quality of care they should expect to receive from their healthcare provider.
- **Health and social care professionals and public health practitioners** can use the quality standards in clinical audit and governance reports or in professional development and validation.
- **Provider organisations** can use the quality standards to provide high quality services for patient care and to monitor quality improvements, to show through Quality Accounts that high-quality care is being provided and highlight areas for improvement, or to show successful performance in a national audit or inspection.
- **Commissioners** may use the quality standards to ensure that high quality care is being commissioned through the contracting process or to incentivise provider performance by using the indicators in association with incentive payments such as Commissioning for Quality Improvement (CQUIN).

**The Health and Social Care Bill (2011) makes it clear that the Secretary of State in discharging their duty to improve the quality of health services "must have regard to the quality standards prepared by NICE".** Although these standards set out aspirational but achievable care and are not targets, the care system should also have regard to them in planning and delivering services, as part of a general duty to secure continuous improvement in quality."

*Source: NICE website*

**NICE Quality Standard for Chronic Obstructive Pulmonary Disease**

| NICE Quality Standard for COPD |
| --- |
| 1 – People with COPD have one or more indicative symptoms recorded, and have the diagnosis confirmed by post-bronchodilator spirometry carried out on calibrated equipment by healthcare professionals competent in its performance and interpretation |
| 2 – People with COPD have a current individualised comprehensive management plan, which includes high-quality information and educational material about the condition and its management, relevant to the stage of disease |
| 3 – People with COPD are offered inhaled and oral therapies, in accordance with NICE guidance, as part of an individualised comprehensive management plan |
| 4 – People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities |
| 5 – People with COPD who smoke are regularly encouraged to stop and are offered the full range of evidence-based smoking cessation support |
| 6 – People with COPD meeting appropriate criteria are offered an effective, timely and accessible multidisciplinary pulmonary rehabilitation programme |
| 7 – People who have had an exacerbation of COPD are provided with individualised written advice on early recognition of future exacerbations, management strategies (including appropriate provision of antibiotics and corticosteroids for self-treatment at home) and a named contact |
| 8 – People with COPD potentially requiring long-term oxygen therapy are assessed in accordance with NICE guidance by a specialist oxygen service |
| 9 – People with COPD receiving long-term oxygen therapy are reviewed in accordance with NICE guidance, at least annually, by a specialist oxygen service |
| 10 – People with admitted to hospital with an exacerbation of COPD are cared for by a respiratory team, and have access to a specialist early supported-discharge scheme with appropriate community support |
| 11 – People admitted to hospital with an exacerbation of COPD and with persistant acidotic ventilator failure are promptly assessed for, and receive, non-invasive ventilation delivered by appropriately trained staff in a dedicated setting |
| 12 – People admitted to hospital with an exacerbation of COPD are reviewed within 2 weeks of discharge |

| NICE Quality Standard for COPD |
| --- |
| **13 – People with advanced COPD, and their carers, are identified and offered palliative care that addresses physical, social and emotional needs** |

[1] Office of National Statistics, 2010. Mortality statistics: Deaths registered in 2010 (Series DR) Table 5. 2010

[2] National End of Life Care Intelligence Network. *Deaths from Respiratory Diseases: Implications for end of life care in England.* 2011

[3] Shahab L, Jarvis M J, Britton J, West R. Prevalence, diagnosis and relation to tobacco dependence of chronic obstructive pulmonary disease in a nationally representative population sample. *Thorax* 2006: 1043-1047

[4] British Thoracic Society. *Burden of Lung Disease,* 2nd Edition. BTS, 2006

[5] Nici L, Donner C, Wouters E et al. American Thoracic Society / European Respiratory Society statement on pulmonary rehabilitation. *American Journal or Respiratory Critical Care Medicine* 2006l 173: 1390 – 413.

[6] www.rcplondon.ac.uk/clinical-standards/ceeu/current-work/ncrop/pages/overview.aspx

[7] Sridhar M, Taylor R, Dawson S et al. A nurse led intermediate care package in patients who have been hospitalised with an acute exacerbation of chronic obstructive pulmonary disease. *Thorax* 2008; 63: 194–200; Griffiths TL, Phillips CJ, Davies S et al. Cost-effectiveness of an outpatient multidisciplinary pulmonary rehabilitation programme. *Thorax* 2001; 56: 779–84.

[8] Turnock et al 2005

[9]

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_080689

[10]

A GP patients' survey 2008–09 reported that 60% of people with a long-term conditions had agreed a plan for managing it.

[11]

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsLegislation/DH_095647?IdcService=GET_FILE&dID=191910&Rendition=Web

[12] Ghosh CS, Ravindran P, Joshi M et al. Reductions in hospital use from self management training for chronic asthmatics. *Social Science and Medicine* 1998; 46(8): 1087–93; Kennedy A, Reeves D, Bower P et al. The effectiveness and cost effectiveness of a national lay-led self care support programme for patients with long-term conditions: a pragmatic randomised controlled trial. *Journal of Epidemiology and Community Health* 2007; 61: 254–61; Vickery DM, Golaszewski TJ, Wright EC et al. The effect of self care interventions on the use of a medical services. *Medical Care* 1988; 26(6): 580–8.

[13] National Collaborating Centre for Chronic Conditions. Chronic obstructive pulmonary disease. National clinical guideline on management of chronic obstructive pulmonary disease in adults in primary and secondary care. Thorax 2004;59 (Suppl 1) :1–232

[14] Royal College of Physicians. The National COPD Audit 2008. Royal College of Physicians, London. The term 'unit' was used to describe each organisation that participated in the audit: specifically, for the purposes of the audit, a 'unit' was defined as 'a hospital that admits acute unselected emergency admissions'. Thus, where a whole Trust has participated in the audit, the term 'unit'

refers to that Trust. Where a hospital has participated in the audit as part of a Trust, the term 'unit' refers only to that hospital within the Trust. Participants were asked to define 'units' in terms of the functionality of their Respiratory Medicine Departments.

[15] Royal College of Physicians. The National COPD Audit 2008. Royal College of Physicians, London.

[16] Ram FSF, Wedzicha A, Wright J et al. Hospital at home for patients with acute exacerbations 70. of chronic obstructive pulmonary disease: systematic review of evidence. BMJ 2004; 329: 315; Skwarska E, Cohen G, Skwarskia KM et al. Randomised controlled trial of supported discharge in patients with exacerbations of chronic obstructive pulmonary disease. *Thorax* 2000; 55: 907–12.

[17] Skwarska E, Cohen G, Skwarskia KM et al. Randomised controlled trial of supported 71. discharge in patients with exacerbations of chronic obstructive pulmonary disease. *Thorax* 2000; 55: 907–12.

[18] PSSRU. Unit costs of health and social care 2008. Nurse specialist (community) per 72. client contact.

[19] Skwarska E, Cohen G, Skwarskia KM et al. Randomised controlled trial of supported 73. discharge in patients with exacerbations of chronic obstructive pulmonary disease. *Thorax* 2000; 55: 907–12.

[20] Taken from Prescription Cost Analysis 2008: antibiotics (£2.22); corticosteroids (£36.45); 74. nebulised bronchodilators (£10.72); temporary oxygen (£30.27).

[21] Department of Health. NHS reference costs 2007–08. DZ21A: Chronic obstructive pulmonary 75. disease or bronchitis with one-day stay and discharged home.

[22] NHS reference costs 2007–08. DZ21A: Chronic obstructive pulmonary disease or bronchitis 76. without intubation, without NIV, without CC.

[23] Ram FSF, Wedzicha A, Wright J et al. Hospital at home for patients with acute exacerbations 77. of chronic obstructive pulmonary disease: systematic review of evidence. BMJ 2004; 329: 315; Skwarska E, Cohen G, Skwarskia KM et al. Randomised controlled trial of supported discharge in patients with exacerbations of chronic obstructive pulmonary disease. *Thorax* 2000; 55: 907–12; Hernandez C, Casas A, Escarrabil J et al. Home hospitalisation of exacerbated chronic obstructive pulmonary disease patients. *European Respiratory Journal* 2003; 21: 58–67.

[24] Skwarska E, Cohen G, Skwarskia KM et al. Randomised controlled trial of supported 78. discharge in patients with exacerbations of chronic obstructive pulmonary disease. *Thorax* 2000; 55: 907–12; Hernandez C, Casas A, Escarrabil J et al. Home hospitalisation of exacerbated chronic obstructive pulmonary disease patients. *European Respiratory Journal* 2003; 21: 58–67.

[25] Royal College of Physicians. The National COPD Audit 2008. Royal College of Physicians, London.

[26] Royal College of Physicians. The National COPD Audit 2008. Royal College of Physicians, London.

[27] Royal College of Physicians, British Thoracic Society and the Intensive Care Society national 79. guidelines (2002), all cited in Royal College of Physicians The National COPD Audit 2008.

[28] http://guidance.nice.org.uk/CG101/Guidance/pdf/English

[29] http://guidance.nice.org.uk/CG101/CostingReport/pdf/English

[30] http://www.nice.org.uk/nicemedia/live/13029/51121/51121.pdf

[31] http://www.pcc.nhs.uk/home-oxygen-service-good-practice-guide-for-assessment-and-review

[32] http://www.brit-thoracic.org.uk/Portals/0/Guidelines/AsthmaGuidelines/sign101%20Jan%202012.pdf