Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

COPD Outreach Programme

Model of Care

NATIONAL COPD QUALITY IN CLINCIAL CARE PROGRAMME

2011

Document Development and Control

Document reference number:	OUTREACH	**Document drafted by:**	National COPD Programme Working Group
Revision number:	010	**Responsibility for Implementation:**	Local Hospitals delivering COPD Outreach Services
Approval date:	August 2010	**Responsibility for evaluation and audit:**	National COPD Programme
Revision date:	January 2013	**Pages:**	50

Table of Contents

1 Background and Introduction

1.1 Introduction to COPD

COPD is a preventable and treatable disease which is characterised by airflow limitation that is not fully reversible. Airflow limitation is usually progressive and associated with increased breathlessness (Global Initiative for Chronic Obstructive Lung Disease, GOLD, 2007). COPD is a world wide problem that has previously been subjected to therapeutic nihilism which due to our current understanding of the causes and it's financial consequences, can no longer be justified Calverley (2002, in Bellemy, 2004).

The Health Service Executive Transformation Programme (2006) identified chronic disease management as a priority (HSE, 2006), and concluded that existing therapeutic models are not meeting the current and future needs of this cohort of patients. This correlates with recommendations by the Department of Health and Children (DOH&C), in their document for Primary Care 2001 (DOHC 2001) stating that current and future initiatives for COPD should be patient centered and that primary care should be at the centre of delivery. The transformation programme is also in keeping with recommendations of the World Health Organisation (WHO) strategy for Chronic Diseases which recommends establishment of evidence based standards of care for particular conditions (WHO, 2008).

1.1.1 Diagnosis of COPD

Differential diagnosis may be difficult yet early detection and staging of COPD are important. As yet no single measure can give an adequate assessment of the true severity of the disease in an individual patient. For therapeutic and prognostic reasons diagnosis is made through a correlation of clinical and physiologic findings.

A diagnosis of COPD should be considered in any patient who has shortness of breath, chronic cough, cough with sputum production, over 40 years of age, frequent winter bronchitis, wheeze and/or a history of exposure to any of the risk factors especially tobacco smoking. (National Institute for Clinical Excellence, NICE, 2004 and GOLD, 2007). The presence of multiple indicators would increase the probability of COPD diagnosis. True diagnosis and staging can only be confirmed with Spirometry.

1.1.2 Prevalence, Mortality and Financial implications of COPD

Reliable prevalence statistics are lacking despite the frequency of major risk factors for COPD, such a tobacco smoking, use of biomass fuels, and air pollution.

Approximately 15% of smokers will acquire COPD (Fletcher and Peto, 1977; Tashkin *et al*., 1983). The WHO estimates that there are approximately 1.1 billion smokers in the world, or approximately one third of the global population (WHO, 1996).

In Ireland COPD accounts for 22% of total respiratory mortality and is the third leading cause of respiratory death after pneumonia and lung cancer (Ahmedzai, 2004; Ireland Needs Healthier Airways and Lungs the Evidence, INHALE (2nd Ed) 2008).

1.1.2.1 Prevalence and Mortality

In Ireland it is estimated that over 440,000 people suffer with COPD, (ITS, 2008). COPD increases with age and 50% of people over the age of seventy in this country have the disease. (ITS, 2008). The health burden of COPD is estimated to continue to increase in line with Ireland's ageing population (ITS, 2008).

A major problem with COPD is estimating its real prevalence in the general population, which may considerably change according to the diagnostic tools used, respiratory symptoms reported by the patient, physician's diagnosis or presence of lung-function impairments.

Ireland's current prevalence of cigarette smoking is one in four (Office of Tobacco Control, 2007), despite the introduction of a National smoking ban in enclosed work spaces since March 2004 (Public Health (Tobacco) Act, 2002). Given Irish smoking prevalence it is unlikely that mortality from COPD will fall in the medium term and thus levels are expected to continue to rise, resulting in COPD being the top cause of Irish respiratory mortality by 2020,INHALE, 2007 and European Lung Foundation, 2008

The variance amongst published COPD prevalence rates may be due to many factors, including true differences in disease occurrence, differences in defining obstructive lung disease, cultural biases and whether spirometry was used to confirm diagnosis. The resulting confusion may lead to under – recognition of the burden of COPD, with significant implications. These potentially include the failure of physicians

to consider the diagnosis of COPD in their practice and the failure of Government to allocate appropriate resources for COPD health care (Halbert *et al*., 2003).

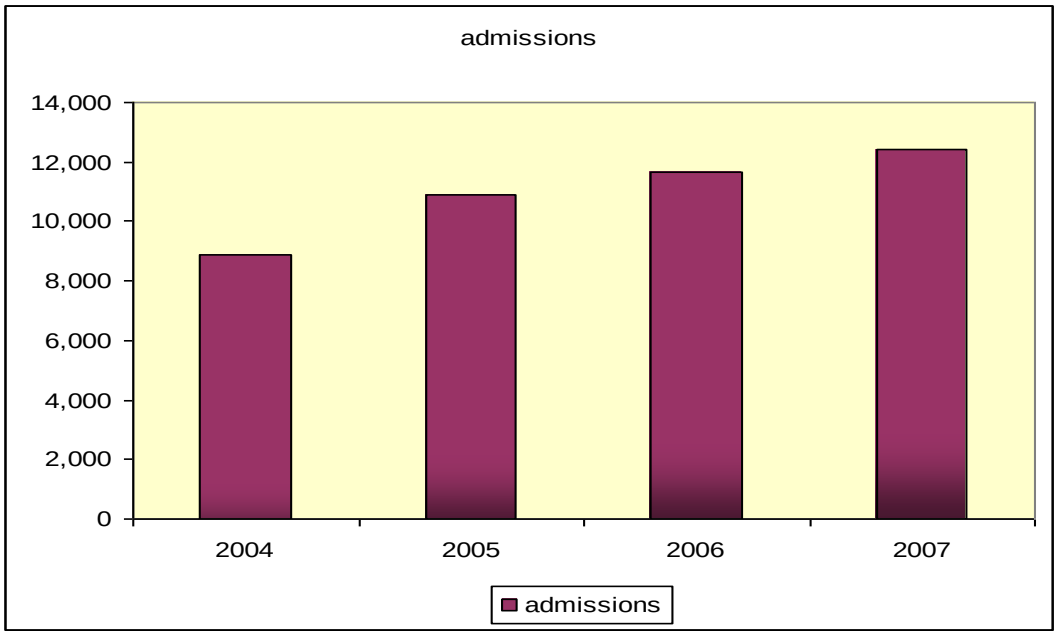
Mortality in severe COPD is between 36% and 50% at two years after admission for an acute exacerbation of the disease (Elkington *et al.*, 2005). Nonetheless, since many patients with COPD exhibit progressive disability rather than immediate death, mortality data do not present the complete picture of the true burden of COPD (Annesi, 2006).

1.1.2.2 Financial Implications

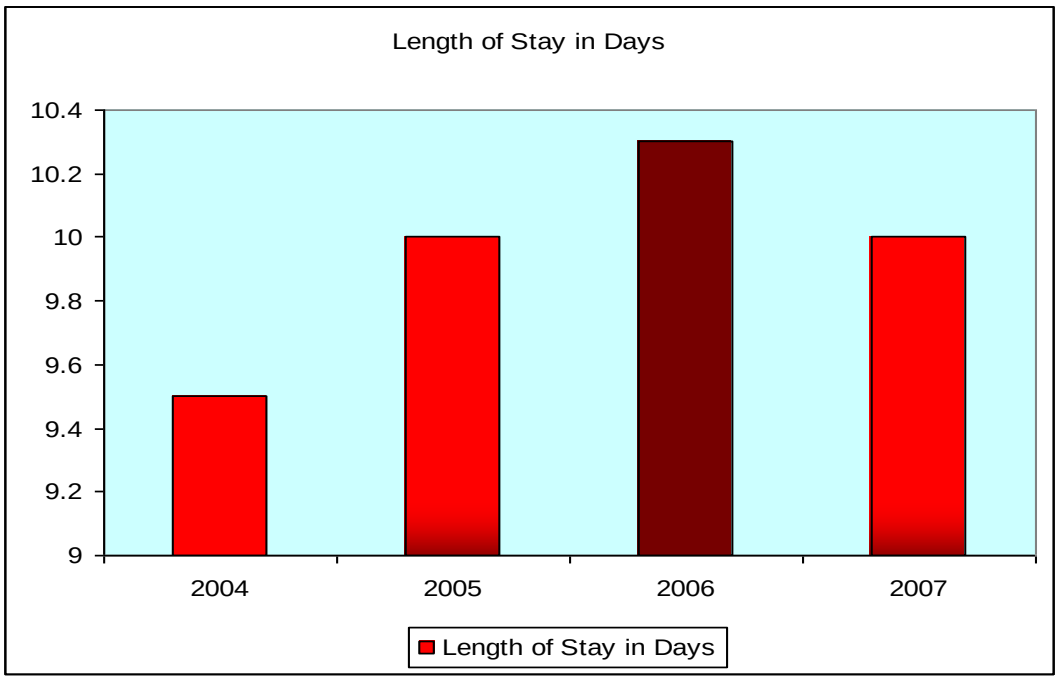
Estimates of the economic impact of COPD care on health care budgets are increasing rapidly, this is due to advances in medicine sustaining an aging population with patients living longer and surviving more serious illnesses (Irish Thoracic Society, ITS, 2008).

The financial implications for the hospitalisation and medical management of an exacerbation of COPD are well publicised, with a large portion of authors making reference to the cost and economic burden of this disease in their publications, (Sermungal *et al.,* 1998; Davis *et al.,* 2000; Mannino *et al.,* 2005; Cassas *et al.,* 2006 and Cotê *et al.,* 2007). International costs for such hospitalizations, amount to $ 32 billion in the United States in 2000 (McGhan *et al.,* 2007), £500 million in the United Kingdom in 2002 (British Lung Foundation, BLF, 2006) and € 8.8 billion Australian dollars in 2008 (Australian Lung Foundation, ALF, 2008). Irish data from 2006 reports that the average cost of inpatient care for a person with COPD was €6,212 per admission, with 11,000 admissions, resulting in a price tag of €68,332,000, (ESRI, HIPE, 2006). This was an increase of 13% on the costs imposed by the disease in 2004 (ESRI, HIPE, 2004). Please see graphs 1, 2 and 3, which give a visual impact of hospital admissions, average lengths of stay and cost associated with admission between the years of 2004 and 2007. Data was obtained from both ERSI and HIPE National Files 2004 to 2007.

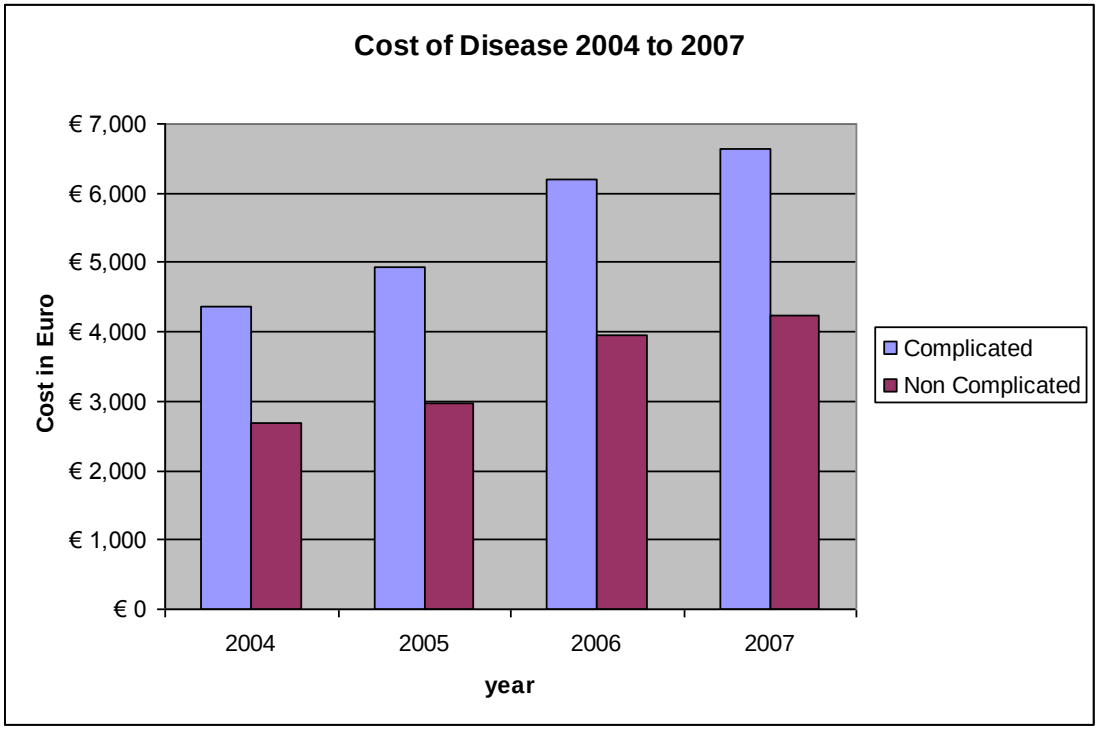
Graph 1: Irish Hospital Admissions 2004 to 2007 with Exacerbations of COPD.



Graph 2: Length of Stay 2004 to 2007.



Graph 3: Cost of Disease 2004 to 2007 per admission.



Unfortunately as well as the tangible cost associated with hospital admissions and primary care visits, there is also an unseen cost associated with COPD. As with all chronic diseases non-adherence to medications and costly treatments such as long term oxygen therapy in patients with COPD is common and contributes to adverse health outcomes, reduced quality of life and eventually increased healthcare expenditure (DiMatteo, 2004). According to the World Health Organisation, in developed countries patient adherence to long-term therapy in chronic diseases averages about 50% (WHO, 2001). Levels of adherence to prescribed treatments in COPD are correspondingly low (Corden *et al*., 1997 and Turner *et al.,* 1995). The waste and excess cost associated with non compliance for chronic diseases were estimated to be as high, if not exceed $ 300 billion dollars a year worldwide (DiMatteo, 2004).

1.1.3 Acute Exacerbations of COPD (AECOPD)

The clinical course of COPD is intermittently interrupted by periods of acute exacerbations, the frequency of exacerbations also increase with the severity of COPD (Fletcher and Peto 1977 and Hurst et al., 2010). Symptoms of AECOPD include increased dyspnoea and wheeze, increased sputum production, an increase

in sputum purulence, cough, chest tightness or pain and fluid retention (British Thoracic Society, BTS guidelines, 1997).

1.1.3.1 Causes of Exacerbations

Causes of AECOPD include viral and bacterial infection and exposure to common pollutants (Hurst et al., 2010). In one-third of all COPD exacerbation cases, however, the cause cannot be identified (Hurst et al., 2010). Smoking, improper use of inhalers and poor adherence to drug therapy programmes are all associated with more frequent episodes of exacerbation (Corden *et al*., 1997; Sermungal *et al*., 1998; Davis *et al*., 2000; DiMatteo, 2004; Mannino *et al*., 2005; Cassas *et al*., 2006; Bourbeau *et al*., 2006 and Cotê *et al*., 2007).

1.1.3.2 Defining the Term "Exacerbation"

The definitions of "acute exacerbation" in the literature are varied. A particular set of features that can be agreed upon to represent a COPD exacerbation has not been agreed (Soler, 1995 and Donohue *et al*., 2002). It is therefore not surprising that a wide variety of definitions of exacerbations have been used in trials and clinical studies. This lack of a generally accepted definition, impacts on the outcome measures used and results obtained (Pauwels *et al*., 2004 and Kessler *et al*., 2006).

Among the literature the term "exacerbation" has been subdivided often incorporating further symptoms in conjunction with those set down by the BTS guidelines (Anthonisen *et al*., 1987; Seemungal *et al*., 1988; Voelkel *et al*., 2000 and Donaldson *et al*., 2002). In a study by Seemungal *et al.* (1998) on quality of life during an exacerbation, exacerbations were defined as having either two or more of three major symptoms (increased dyspnoea, sputum purulence, and sputum volume), or one major symptom together with any one of the "studies" minor symptoms which were increased nasal discharge, wheeze, sore throat, cough or fever. Donaldson *et al.* (2002) also used these criteria to diagnose exacerbations in their study. Criteria used by Anthonisen *et al.* (1987) further divided exacerbations into "types". A type I exacerbation was defined as increased sputum volume, or increased sputum purulence, or increased dyspnoea, and a type II exacerbation was defined as being present when two of the criteria were met.

1.1.3.3 Management and personal cost of Exacerbations

Systematic medical management includes bronchodilator therapy, corticosteroids, antibiotics and in some cases oxygen therapy, often in severe exacerbations the

patient may require hospitalisation for intravenous steroids and antibiotics. If the patient is suffering from respiratory failure they will require oxygen therapy or ventilation either non – invasive (N.I.V.) or full ventilation (Davis *et al*., 1999, Rodriguez, 2000). The reasons for hospital admissions in patients with COPD are complex, more often patients appear to be admitted late on in the evolution of their exacerbation when usual therapy will be unsuccessful (Mc Ghan, 2007).

Patients who suffer advanced COPD often experience frequent exacerbations of their disease that result in medical intervention and hospitalisation, (Flecther and Peto, 1977; Donaldson *et al*., 2002 and Cote *et al*., 2007), resulting in increased expenditure in healthcare and poor outcomes for these types of patients, (Hilleman *et al*., 2000; Miravitlles, 2002; Strassels, 2001; Donaldson *et al*., 2002; Bourbeau, 2003, 2006; Buist *et al*., 2006 and Mannino and Buist, 2007). Regular exacerbations are associated with reduced lung function, (Donaldson *et al*., 2002 and Kanner *et al*., 2001), lower health related quality of life scores, (Seemungal *et al*., 1998) and poorer survival outcomes when compared to occasional exacerbators, (Almagro *et al*., 2002; Patil *et al*., 2003 and Gunen *et al*., 2005).

Good communication between physicians, health care providers and patients includes mutual understanding of the terminology used. This is essential for effective respiratory disease management (Kessler *et al*., 2006). With this in mind, it is important that the word exacerbation is clearly defined between them at a local level, in order that both patients and physicians have the same understanding of the term (Partridge *et al*., 2000; Donohue *et al*., 2002; Pauwels *et al*., 2004 and Kessler *et al*., 2006).

Knowing the patient and their ability to comprehend their disease and its process are thus crucial. With this in mind, links with health care providers who have a fundamental awareness of how COPD sufferers cope with the burden of their condition could prove to be key in the management of this disease.

1.2 Introduction to COPD Outreach Services

1.2.1 Hospital at Home Model

Hospital at Home [HaH] is a specific subtype of intermediate care, where active treatment is provided by healthcare professionals in the patient's own home for a

condition that otherwise would have required hospital care, this treatment is always for a limited time period (Davis *et al*., 2000).

As a consequence of the economic burden of AECOPD, research shows that for a select proportion of patients with COPD, HaH care is safe, well tolerated and an economic alternative to hospital admissions, (Gravil *et al*., 1998; Davis *et al*., 2000 and Skwarska *et al*., 2000). The benefits to the patient include being able to recuperate in their own environment with family support and reduced cost associated with hospital visits.

In randomised studies by Cotton *et al*. (2000) and Ojoo *et al*. (2002) early supported discharge was trialed for patients with COPD, both studies showed an average of 10% reduction in re-admission rates following HaH in comparison to controls. (Cotton *et al*., 2000 and Ojoo *et al*., 2002).

Following the initiation of a COPD Outreach programme based on a HaH approach, in an Irish hospital Murphy *et al*. (2002) showed a reduction in average length of stay from 10.1 days to 2.6 days, on a one year review of service. Patients were followed for a period of three months post discharge in which time MRC dyspnoea scores, quality of life and spirometry results all significantly improved and were maintained.

HaH schemes provide for high quality, professional, holistic patient focused service in the patient's home, in an attempt to improve the patient's quality of life and increase their coping strategies and social functioning skills or ability. This bridges the gap between hospital and community by providing a safe transition home. Use of HaH intervention teams following AECOPD has gained favour over the past six years. In 2004, Ram *et* al. concluded that HaH was a safe and effective treatment for one in four patients with exacerbations of COPD (Ram *et al*., 2004). The NICE (2004) guidelines for AECOPD management included appraisal of this scheme. As a result the British Thoracic Society Guideline Development Group issued guidelines on intermediate care – Hospital at home in 2007 (BTS, 2007).

There is a difference in terminology in the literature relating to "HaH" for AECOPD.

The terms used include "admission avoidance", where admission is avoided following GP referral, "early supported discharge" or "assisted discharge", where a short initial admission is followed by home care (British Thoracic Society Guideline

Development Group, 2007). Both NICE (2004) and the BTS (2007) incorporate all cases and consider hospital at home as a treatment modality which encompasses early supported discharge and admission avoidance. In brief the COPD Outreach will visit the patient at home for a set period of time, guided by the type of "discharge" programme the patient is enrolled into based on the guidelines.

There are also many variances among the literature with regard to the acceptance of patients onto "Hospital-at-Home" programmes. A number require admission for 24 hours, prior to discharge, while others aim to prevent admission altogether, several follow the patient for an extended period of time providing several home visits, while others afford one to two home visits, whilst inclusion in pulmonary rehabilitation was part of a hospital at home programme in one particular publication, (Davies *et al*., 2000; Hermiz *et al*., 2002; Murphy *et al*., 2002; Coultas *et al*., 2005; Casas *et al*., 2006 and Sridhar *et al*., 2007).

Table 3 Summary of HaH approaches in COPD

	Admission avoidance		
	Direct GP referral to respiratory unit for assessment	**Hospital referral for admission**	**Early supported discharge**
Setting	Outpatient clinic	A&E admissions unit	Review of COPD inpatients
Scope	Standby service operating at least during normal working hours		Normal minimum includes review on the weekday following admission
Expected workload	High, difficult to predict, inappropriate referrals likely	Between one fifth and one sixth of all COPD admissions depending on the hours of operation of the service	Over one third of admissions for COPD
Proportion suitable for HaH	Approximately two thirds	One third	Over one third
Advantages	Popular with patients and GPs May abort some exacerbations	Reduces hospital bed-days	Allows planned assessments and uses HaH resources economically Allows period of clinical stability which increases eligibility for HaH
Disadvantages	May generate unnecessary work Not examined in randomised controlled trials	Recruitment limited by hours of operation Requires large throughput of patients to be time efficient	Does not reduce admission rates

Intermediate care - Hospital at Home in COPD: Guideline, British Thoracic Society, 2007

Conversely there was also much uniformity in the content of these programmes, which included;

- Comprehensive assessment of the patient, stage of disease and co-morbidities.
- Education on disease management, vaccinations, medication knowledge, assessment and education of administration techniques for pharmacological therapies.
- Agreement on a patients medication and a care plan between the specialist nurse and the patients team of doctors/ or primary care team.
- Accessibility of the patients to a specialist nurse in secondary care facility or primary care team.
- Education on early exercise, chest clearance, smoking cessation and coping mechanisms.

All of these programmes have demonstrated statistically significant results with regard to reduction of re-exacerbations, re-admissions and demonstrated cost effectiveness. (Davies et al 2000, Hermiz et al 2002, Murphy et al 2002, Coultas et al 2005, Casas et al 2006 and Sridhar et al 2007).

1.2.2 COPD Outreach Services

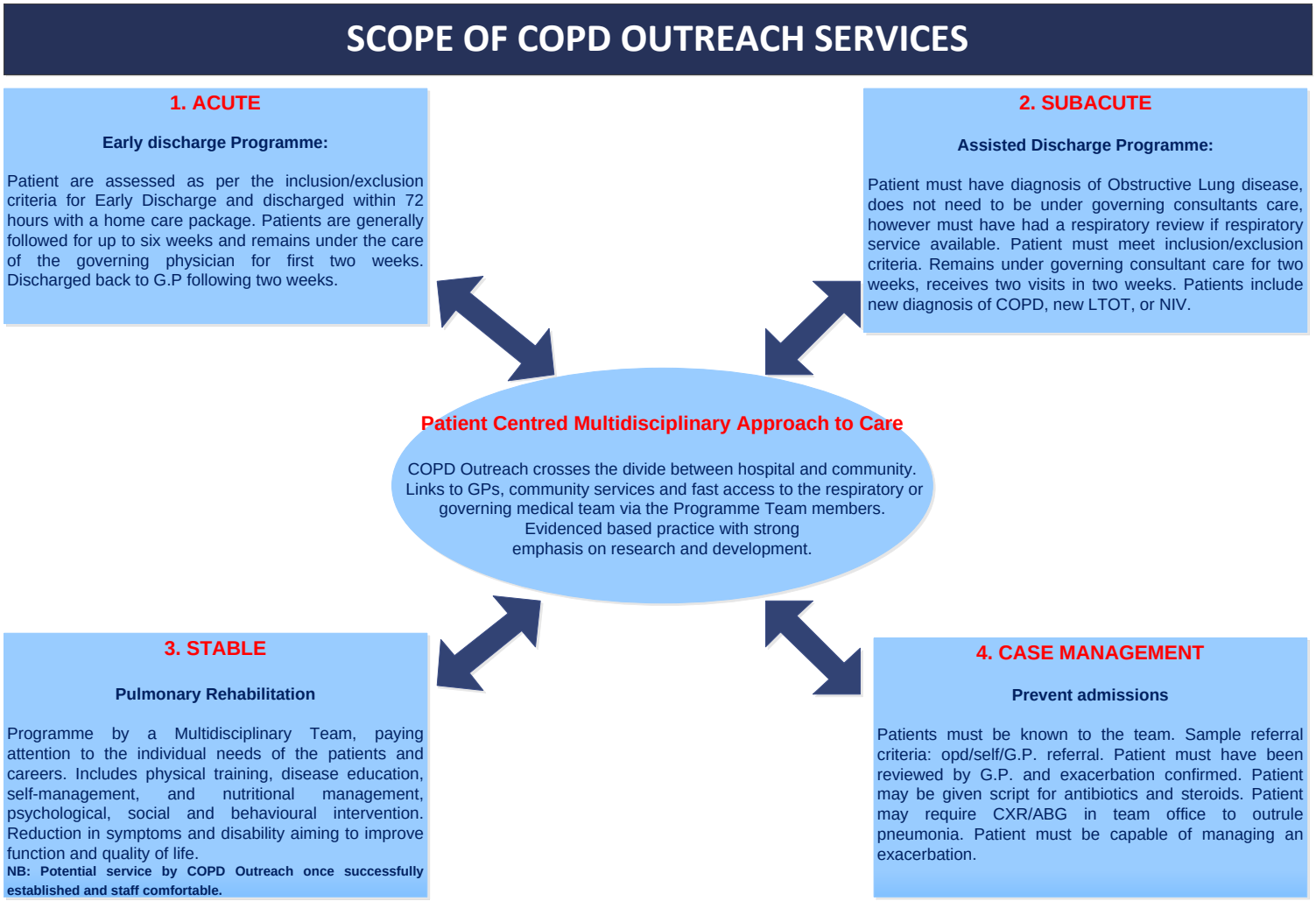
COPD outreach services remain in their infancy in Ireland; Two Dublin hospitals provide services with one further service in the Midlands. Mainland Europe, the United Kingdom and the USA however have adopted HaH for AECOPD enthusiastically (Gravil *et al*., 1998; Davis *et al*., 2000 and Skwarska *et al.,* 2000). Although there are some excellent COPD services provided throughout Ireland there are no national standardised policies, protocols or strategies in place to support health care providers in managing patients with AECOPD.

Despite optimum medical management, care giving interventions, education and back up support and assistance, COPD exacerbations continue to result in hospital admissions here in Ireland. Consequently, there is a growing need for other options for COPD patients, to help them manage the burden of their disease in the comfort of their own home with backup support of a designated COPD team. These options should not only aim to control and alleviate symptoms and complications of AECOPD but also teach patients skills to identify early signs of deterioration in their disease, monitor it, manage it and thus prevent further detrimental exacerbations of their disease. (Bourbeau *et al*., 2003, 2006 and Bourbeau, 2008).

This document outlines the establishment of COPD Outreach programmes. The priority of the programme is to provide early supported discharge options to patients

who present with an uncomplicated exacerbation of their COPD. The following diagram explains the potential SCOPE areas where a COPD Outreach team could impact if given the appropriate resources, once experience and confidence with this type of patient has been achieved.

2 COPD Outreach Services Model



2.1 Aim of the COPD Outreach Service

- To provide an “Early Supported Discharge” programme by a COPD Outreach Service for certain patients with uncomplicated AECOPD within 72 hours of presentation, that would otherwise require acute in-patient care.

2.2 Objectives of a COPD Outreach Service

- Reduce the number of admissions, ED presentations and hospital length of stay.
- Facilitate a safe, planned early/ assisted discharge.
- Provide education on the disease process, exacerbation signs and symptoms.
- Educate patients and their care givers on medication management.
- Facilitate smoking cessation.
- Encourage independent functioning, improving quality of life.
- Liaise effectively with primary care teams and support services.
- Teach appropriate airway clearance techniques.
- Encourage early activity and exercise within the patient’s own limitations.
- Ensure patients are appropriately referred for follow up services.
- Provide objective measurement of the service using clinical audit and outcome measures.

2.3 Measureable Outcomes

2.3.1 Benefits Plan

Each COPD Outreach Service will be required to report centrally to the COPD Programme at the end of the first year post implementation statistics, key performance indicators (KPI) and benefits plan as set by the programme. The below table illustrates the agreed National Reporting Measures on the success of the COPD Outreach Programme between 2011-2013. The Programme has developed local statistics and KPIs (Appendix 3) for which a baseline will be reported in the first year of implementation. This will be validated against HIPE figures.

Baseline data and targets will be agreed between the national programme and local site in advance of programme initiation.

Reporting will take place on a bi-annual (6 monthly) basis illustrating the performance of the programme at the local site against the KPI set. It is expected that Site management

The below table illustrate the national targets/benefits plan for the National COPD Programme.

Type of benefit	Q1	Q2	Q3	Q4	2012	2013	Comment
Reduced Admissions					*20% reduction*	*Maintain reduction*	***HIPE data for 2011 will be validated by March 2012***
Improved Ave. LOS					*1 day reduction*	*2 day reduction*	***HIPE Codes used to define COPD*** ***J40 – J47 (inclusive)***
Readmission rate					*Maintain 30-40% rate*	*Maintain 30-40% rate*	***As above***
Quality of Life Score					*EuroQol/ CAT Score Baseline*	*Set target*	***Will be collected by local team and reported centrally***
Impact of disease					***MMRC etc***	***Set target***	***Will be collected by local team and reported centrally***

Local Baselines and service targets agreed

2.3.2 Performance Measure Explained

1. Reduced Admissions: data will be collected through the HIPE system which has sometimes misclassified COPD patients. It is expected that having the COPD Outreach involved that these patients will be more accurately coded and thus more accurately report on COPD admission performance.

   The code J40-J47 > 35 years will be used as the diagnostic HIPE codes for COPD discharges/admissions.

2. Improved Average Length of Stay: The HIPE mean length of stay used to derive the average length of stay for COPD patients. HIPE diagnostic ICD10 codes J40-J47 >35 years.

3. Readmission Rate: The rate is determined by subtracting the number of discharges/admissions and the number patients in the J40-J47 > 35years category as a percentage of admissions. Both values are sourced from HIPE.

4. Quality of Life Score: % increase in score from first to final assessment. Source is COPD Outreach performance reports.

5. Impact of Disease: % decrease in MMRC from first to final assessment. Source is COPD Outreach performance reports.

2.3.3 Statistics Reporting

The National COPD Programme have developed a COPD Outreach database (excel or access) for use in the collection of patient demographic and condition specific datasets. The programme has also designed a reporting and KPI template which is required for feedback to the national programme bi-annually (6 monthly).

Due to the nature of the early supported discharge package, HIPE does not demonstrate the case load for the Outreach Service hence, the requirement to supplement HIPE statistics with the Outreach statistical reporting. These can be found in Appendix 3.

Performance measures will be tracked via database in Appendix 3.

2.4 Resource Commitments for COPD Outreach

The proposed structure of the team is as follows;

1) Respiratory Clinical Support

2) Respiratory Nurse (CNMII Grade) x 1 WTE

3) Respiratory Physiotherapist (Senior Grade) x 1WTE

4) Clerical Administrator (0.5 WTE)

2.4.1 Clinical Support

Support of a Respiratory Consultant/ General Medical Consultant with an interest in COPD, to maintain clinical responsibility for patients enrolled into the scheme/programme and offer support/governance to the team. Patients will be under the care of this consultant for the initial two weeks of the early discharge programme post initial discharge.

2.4.2 Role of COPD Outreach Team

2.4.2.1 Dimensions for all COPD Outreach Team Staff

To work within the hospital and community setting as part of the outreach team, in consultation with the Respiratory Physicians and other relevant clinical services.

2.4.2.2 Knowledge, Skills and Experience Required

Essential Skills Respiratory Nurse/CNS and Senior Physiotherapist

- The nursing post holder must be
    - on the live register with An Bord Altranais (General Division).

- Work within scope of practice and have a minimum of 5 years experience post registration including 2 years experience with patients with chronic lung difficulties.
- Hold a post graduate qualification relevant to respiratory medicine.

- The physiotherapist post holder must have a minimum of 3 years post registration experience in respiratory care notably in chronic lung disease
- BOTH MUST:
- Demonstrate a high level of communication and interpersonal skills
- Ability to practice safely and effectively fulfilling his/ her professional responsibilities within the scope of practice.
- Demonstrate the ability to work as a team and in isolation
- Have experience in leading a multi-disciplinary team
- Full clean driving license with access to own transport and indemnified insurance
- Computer skills

Recommended key skills for members of the COPD Outreach teams:

- Ability to take a comprehensive clinical history;
- Proficiency in assessing clinical condition;
- Problem solving skills
- Familiarity with pharmacological and non-pharmacological approaches;
- Knowledge of current guidelines in COPD management;
- Excellent communication skills;
- Excellent team working skills

Useful but not essential team member skills:

- Ability to perform chest auscultation;
- Venous and arterial blood sampling;
- Performance of basic interpretation of an ECG;

- Prescribed xray on completion of nationally approved training (nursing);
- Prescribe medications under a collaborative working agreement having completed nationally approved training (nursing);
- Interpretation of a chest radiograph (physio);
- Performance of spirometry;
- Understanding of airway clearance techniques

***Adapted from the BTS recommendations on key skills for team members 2007**

Desirable skills

- Experience/demonstrated interest in clinical audit and research.

2.4.2.3 Key Results Areas Required

Managing operations:

Used agreed inclusion/exclusion criteria to assess COPD patients for suitability for early supported discharge.

- To plan and implement care package from hospital to home.
- To follow best practice guidelines and protocols.
- To promote an efficient holistic service, that is comprehensive and understood by patients and careers.
- To evaluate research based practice.
- To be a resource of specialty advice for hospital and community staff.
- To contribute to patient education and information.
- To contribute to audit and clinical research.

Managing Finance:

- To promote a cost effective service for patients.
- Identify value for money initiatives

Management of People:

- To create, maintain and enhance effective working relationships with health care professionals in hospital and the community.

- To contribute to developing an effective communication system for disseminating good practice for COPD patients to other health care professionals.

Management of Information:

- To contribute to a system that will allow for continuing patient outcome/ performance management of COPD patients by maintaining an up-to-date data base, statistical and performance reporting.

- To contribute to the evaluation of information effectively to improve the quality of service provided.

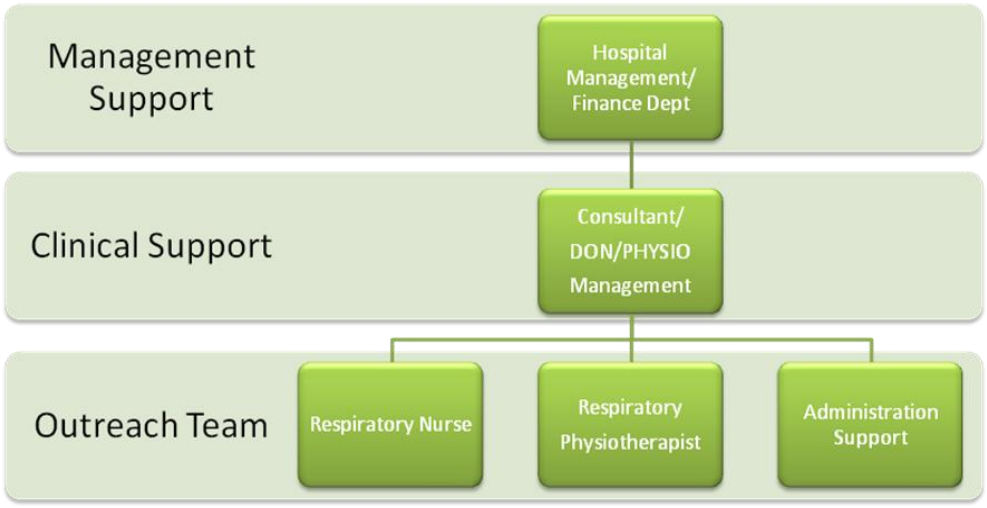
Communications and Working Relationships:

- All members of multi-disciplinary team in hospital and community.
- Patients, relatives and friends.
- Visitors to the hospital.
- Acute admissions officer.
- Education agencies.
- Professional bodies.
- Statutory and voluntary agencies

2.5 Governance of COPD Outreach Services

The governance structure will be formed locally with the hospital teams themselves. It is proposed however, that quarterly multi-disciplinary team (MDT) meetings are held between the COPD Outreach Services, Medical Support and Hospital Management teams to review progress and impact of the services against the benefits plan and performance targets. It is important that the defined roles and responsibilities for all staff involved in COPD outreach services are integrated into the existing governance structures within the organisation with clear reporting lines to CEO/Hospital managers. Below is a sample organisational chart for COPD Outreach Services. Each site will be required to inform the programme of their structure with named roles, responsibilities and accountabilities of those roles defined.

COPD Outreach Governance Structures



2.5.1 Hospital Management Support

The support will be required from the Management in the hospital to address shortfalls in the service and to ensure adequate and appropriate staffing for the service. They are responsible for;

- Assigning required resources for COPD Outreach Services
- Hold Quarterly review of the service with the team
- Report performance to HSE (CPCP)

2.5.2 Clinical Support

- Support the programme and outreach team
- be responsible for decisions made by team
- be responsible for the performance of the service
- Report performance Quarterly to hospital mgt
- All patients will be under the care of the identified lead consultant discharged into the care of the GP.

2.5.3 Outreach Team

The outreach team will work as part of a Multi-disciplinary team and will be responsible for patient well-being and for keeping management informed of progress. Their role includes:

- Agreeing to the structure, processes & functions of outreach programme
- Delivering care as per programme PPPG's
- Recording dataset for patient
- Reporting on agreed targets

- Managing and mitigating risks

2.6 Cost of COPD Outreach Services

2.6.1 Recurring Costs

The costs listed in the following tables may not be incurred in all instances. The local site will need to determine what items of cost apply to them for capital and non-pay items.

COPD Pulmonary Outreach Costing	
Estimated Recurring Costs:	
Staffing Requirements	
Respiratory Consultant (x)	**n/a
Respiratory Nurse Specialist / CNS/CNMII x1	70,058.74
Pulmonary Physio SNR x 1 WTE	68,631.84
Co-ordinators allowance	10,000.00
Clerical Staff Grade III x .5 WTE	22,228.83
	170,919.41
Other Recurring Costs include :	
Office space, heating, lighting etc	1,500.00
Mobile phone (annual rental + approx. usage) x 2	1,000.00
Travel expenses p/a	5,000.00
Disinfection/steralisation solution p/a	150.00
Car insurance top-up for carrying equipment	91.77
Stationary & postage etc p/a	1,000.00
Disposables for spirometer & Dinamap p/a	120
Weekend out of hours cover	3000
	11,861.77
Total Recurring Costs	**182,781.18**

2.6.2 Non –Recurring Costs

Non - Recurring Costs include:	
Staff Training	
Advertising & recruiting staff	***n/a
Spirometry training course	350
Medical Equipment	
Equipment Bags x 2	300.00
Spirometers x 2	4,200.00
Dynomaps 400 x 2	4,000.00
Calibration Syringe	200.00

Thermometers x 2	100.00
Stethoscopes x 2	200.00
Office Equipment	
Desk top computer	700.00
Laptop	900.00
Telephone/fax machine	300
Colour photocopier/ Printer	1,500.00
Filling cabinet x 2	260
Shredder/ confidentiality bin?	100
Patient Assessment Chair	1,000.00
Office Desks x 2	600
Office Chairs x 2	240
Nebulisers x 6	500
Total Non-Recurring Costs	**15,450.00**

2.6.3 Total Estimate Cost per Outreach Centre

Total Cost of Outreach over 3 years	
Total estimated cost Year 1	198,231.18
Total estimated cost Year 2	182,781.18
Total estimated cost Year 3	182,781.18
Total estimated cost over 3 years	**563,793.54**

*** These are estimated financial implications to initiate an active Pulmonary Outreach Pilot Programme based largely on the model used by Beaumont Hospital, Dublin since 2001 and Mullingar 2005.**

**** Acting respiratory consultant will support the programme and will incorporate it into the current role.**

***** Included in OPEX**

2.7 Accessing COPD Outreach Services

2.7.1 Hours of Operation

Service Covered Monday to Friday by 2 resources.

Hours of operation to be agreed locally.

Instructions for patients around out of hours contact to be derived locally and delivered in conjunction with local CIT (if available), GP, ED and out of hours services.

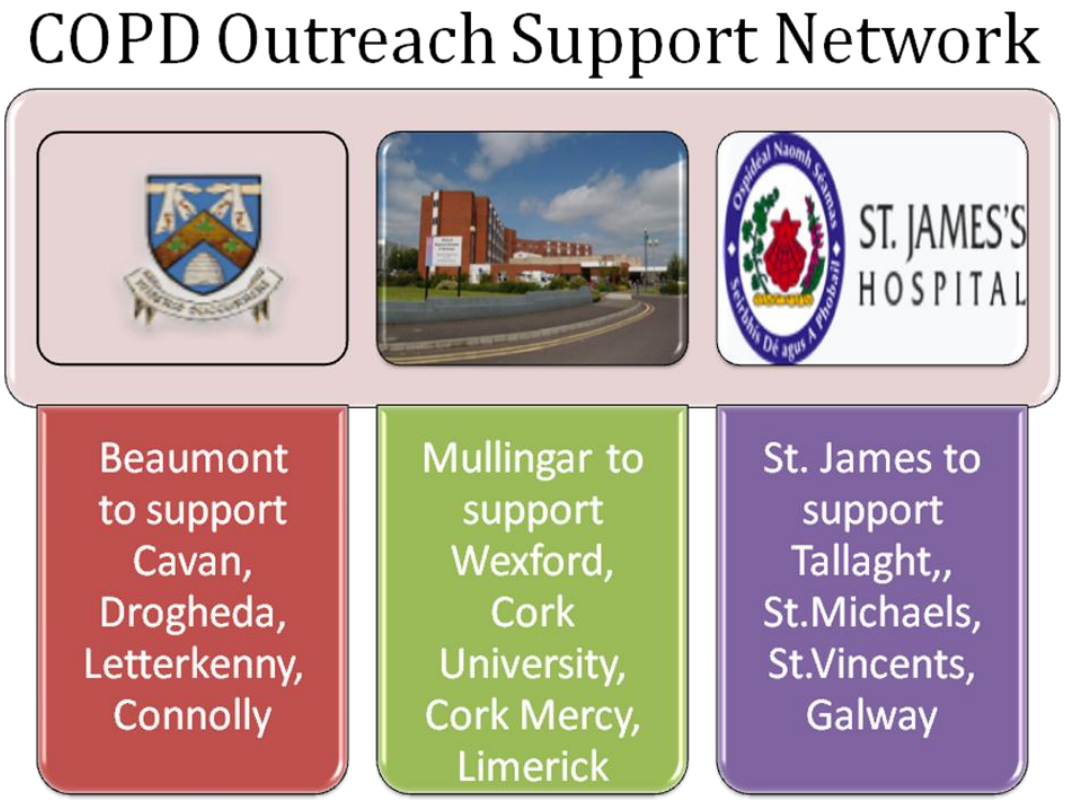
2.7.2 Support Network

For the successful implementation of COPD outreach services, it is expected that the new teams will require links with current Outreach Services in Beaumont Hospital, Dublin 9, St. James Hospital, Dublin 8 and Midlands Regional Hospital Mullingar. The existing services will provide initial training and ongoing support to new teams. Each new Outreach programme will be linked with an existing service based on geography and type of hospital i.e. rural/urban setting.

Newly appointed team members will need to visit one of these current services to observe the operational process, patient identification assessment and patient reviews in the home. They will need education on clinical assessment, use of the assessment and evaluation sheets and education on recognising when the discharge is failing and next steps to take.

It is anticipated that support services will be available for consultation between the hours of 9-5pm mon – fri.

The proposed outreach support network based on 2011 implementation sites are list below. This table will be updated for 2012 implementation in 2012 sites.



2.7.3 Patient identification/ referral process:

There are two ways in which COPD Outreach Services may be accessed by patients.

a. Patients will be identified by the team each morning in the Emergency Department , AMAU or ward areas and assessment for inclusion in the programme.

b. Referrals can also be made by medical teams by way of local referral systems (computerized/telephone referrals).Patients will be assessed for suitability for early discharge within **72** hours of admission by the medical team.

Patients who:

- fulfill the Inclusion/Exclusion criteria for early supported discharge, set down by the BTS IN 2007(see figure 1)
- have a diagnosis of COPD
- give their **CONSENT** will be suitable for early supported discharge
- patients admitted less than 72 hours
- if over 72 hours consider assisted discharge per service scope

2.7.3.1 Selection Criteria for COPD Outreach Services

Inclusion Criteria	Exclusion Criteria
• FEV 1 < 80% predicted, • FEV 1 / FVC < 70% predicted, • MMSE >7, • Systolic B/P > 100 mmHg, • ABG's Ph > 7.35, PO2 > 7.3 kPa, PCO2 < 8 kPa, (on room air unless on oxygen therapy) • Total WCC 4 – 20 * 10/1, • 0 – 72 Hrs of presenting to hospital. • Access to telephone • Adequate social support	• Suspected malignancy, • Pneumothorax, Pneumonia, • Uncontrolled LVF, • Acute ECG changes, • Requires full time care, • Insufficient home care, • Requires I.V. therapy • Type I Diabetes

Figure 1*Based on BTS guidelines for HaH 2007*

3 Delivery of COPD Outreach Services

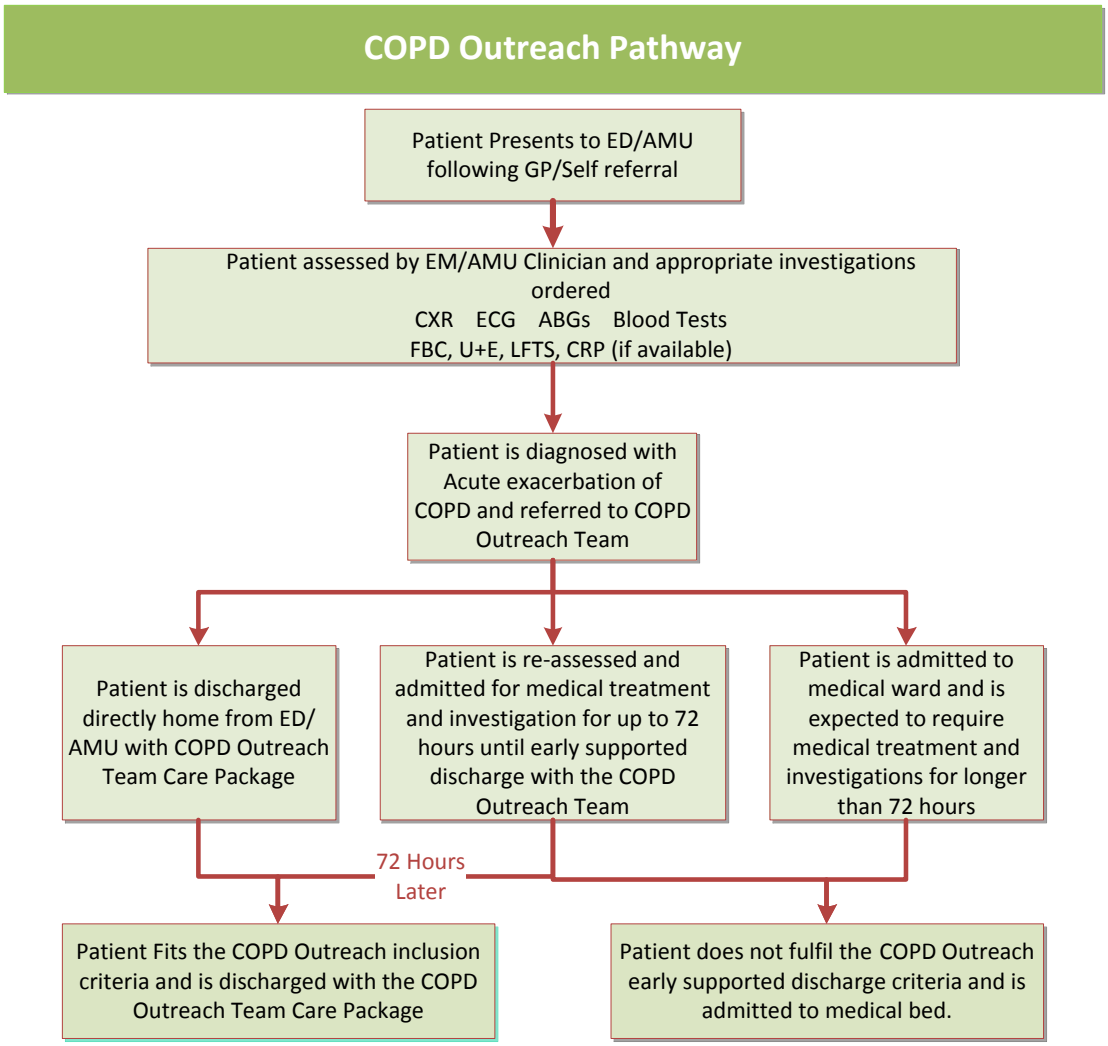
3.1 Database of Patients who are eligible

A full data base will be maintained of patients reviewed for programme, assessed, accepted and also those who did not meet criteria giving a rationale (see Appendix 3).

It is also anticipated that the new COPD Outreach team will maintain an up to date data base of all recorded information on the patients over the course of their inclusion in the programme. Thus audits of service provision can be easily performed.

3.1.1 Components of Hospital assessment based on GOLD Guidelines

- Patient Demographics
- Reason for current presentation, Risk Factors for COPD development.
- PmHx, Medications and compliance etc
- COPD History:
    - Admissions
    - Baseline Spirometry / ABG's
    - Severity Rating, Based on Spirometry and GOLD definition of disease severity.
    - Smoking history
    - Vaccines
- Comprehensive Social History
- Objective Examination, vital signs, SaO2 monitoring, bloods, chest x-ray, ECG and Sputum for C+ S (results 24-48 hours).
- Vital signs
- (NB: respiratory rate and able to talk full sentences)
- SaO2 and ABG
- (Respiratory Failure :Type I or Type II; compensated or uncompensated)
- bloods
- Hb, WCC, Neutrophils, U&E, CRP.
- Chest X-ray,
- ECG (no new ischemic changes and no tachycardia)
- Previous CT-scan.
- Previous Spirometry
- Subjective Examinations, Borg, MMRC and Health Related Quality of Life questionnaires.
- Patient Knowledge of COPD
- Medication Compliance/inhaler Knowledge
- MMSE if deemed necessary (**Assessment and evaluation flow sheet Appendix** 3)



3.2 Case Management

Following the initiation of this service it may become evident that particular patients require continual support, as in they may continually present to hospital Accident and Emergency departments. These patients should remain on the services “Case Management” programme. This is not a new programme type, more an issue of increased contact to ensure these patients remain at home. Once initial demographics and an initial Early discharge programme has been completed, the team should remain in contact with the patient via phone to ensure management and treatments are effective. Likewise these patients will be in a position to contact the team should they have any concerns about their respiratory status.

3.3 COPD Outreach Package of Care

- A member of the outreach team visits patients daily for the first three days, at the discretion of the Team member. The patient may receive a prescription,

oral antibiotics ± Steroids, bronchodilators from the medical team on discharge.

- The patient will receive a visit at two weeks and again at six weeks.
- Nebuliser, if patient does not already have one and deemed necessary.
- At each visit a team member performs a medical assessment, records vital signs, chest auscultation and records various questionnaires on symptom perception of breathlessness, impact of the disease and quality of life.
- The patient also receives education on medication and disease management, vaccination as guided by the BTS and GOLD guidelines for home management.
- Smoking Cessation Advice/ Intervention, prescription for NRT if patient requests.
- Medication Compliance, inhaler technique is assessed,
- Assessment of cough, sputum production, colour, etc
- Individualised Respiratory Passport including self management plan given at day 14 visit.
- Advice on chest clearance techniques to facilitate the removal of secretions.
- Instruction on early activity and exercise prescribed as per patient's competence level, individualised home exercise.
- Patient remains part of the Consultant Physician's responsibility until discharge back to the GP at day 14 (early discharge programme only)
- Referral to Support Services if indicated, Home Help, meals on wheels, Public Health Nurse, Occupational Therapist, Dietician and community Physiotherapist..
- If appropriate the patient will be referred to Pulmonary Rehabilitation.
- Referral for Oxygen therapy assessment – ABG and 6MWT to ascertain the need for LTOT or ambulatory oxygen, all patients provided with contact details of the Outreach team should they encounter difficulties, require a visit or have queries about any aspects of their care.

For the first two weeks post discharge clinical responsibility of the patient remains with the Clinical lead Respiratory Consultant for the service. The patients G.P is informed in writing of their inclusion in the Early Discharge programme following the first home visit. If the Outreach team has concerns about a patient's progress, their care is discussed with the Respiratory team.

A detailed discharge summary will be forwarded to the patients G.P. once all visits have been completed indicating the patients response to the new treatments.

All details of the visits are recorded in a patient database.

3.4 What happens if the patient deteriorates?

- Contact number of Outreach Team is provided to enable patients contact service if they have concerns about their respiratory status (within service hours outlined in patient information leaflet and whilst enrolled in the programme).
- Ongoing collaboration with respiratory team re patients condition,
- Emergency outpatient assessment / referral if required.
- If Out of hours and weekend cover is not provided. Instructions for patients around out of hours contact to be derived locally and delivered in conjunction with local GP, ED and out of hours services.
- Readmission can be triggered through ED by patient or Outreach team.

4 Implications to Practice

Health care professionals have a clear responsibility to the patients in their care and should ensure the standard and delivery of that care is adequately meeting the need of patients. We need to be mindful in our responsibilities not only in planning care but also in re- evaluating patient outcomes, and demonstrating the ability to change current practices and interventions to effectively respond to the identified need of the individual patient. This proposal indicates that with minimal resources COPD Outreach programmes can provide easily accessible support, education, health promotion and guidance to COPD sufferers which impacts greatly on their rates of exacerbation and hospital admissions but more importantly their own governance.

4.1 Implications for Management

These programmes involve no costly management choices, consume minimal physical resources and generally employ only two to three staff.

Thus it is not outside the bounds of possibility that many key recommendations could be successfully addressed without any major drain on either human or financial resources. What it would involve is more awareness on the manager's behalf, and managerial practices to ensure that polices are adhered to and an unrelenting will on behalf of the COPD Outreach team, to ensure that these patients get the care that they deserve. Admittedly, the unquestionable need for the expansion of COPD Outreach services nationwide would demand more strategic foresight and financial commitment on behalf of key stakeholders and financial controllers.

4.2 Financial Implications

The COPD Outreach Programme provides potential for one in five COPD admissions to be taken home with Outreach team under assisted discharge programmes. This will have an impact on the length of stay for a COPD admission with an estimated reduction in Av LOS of 2 days within 2 years. There is an estimated reduction in admissions of approximately 20% per annum based on HIPE and ERSI data of admissions of 2009.

4.2.1 Additional Benefits

1) Improve levels of adherence to prescribed treatments in COPD, through supervision education, thus improving concordance, reducing elements of waste.

2) Reduce the number of re-exacerbations through appropriate medication and early self management principles, which should impact on primary care utilization.

3) Reduce ED presentations, overcrowding and inappropriate admissions.

4) Increase bed availability for elective admissions, improving performance indicators.

5) Reduce the number of "revolving door" patients.

Correct monitoring of LTOT and portable O2 use, which can then be re-assessed following patients convalescence period

4.3 Bed and Financial Savings from an Urban Outreach between 2008 and 2009

Savings 2008		Savings 2009	
Early Discharges	44	**Early Discharges**	44
Bed days saved	467.5	Bed days saved	503
Financial saving	**€ 410,256**	Financial saving	**€ 422,822**
Assisted Discharges	39	**Assisted Discharges**	39
Bed days saved	195	Bed days saved	161
Financial saving	**€ 163,800**	Financial saving	**€ 135,626**
Prevent Re –admissions	11	**Prevent Re –admissions**	9

Bed days saved	140.8	Bed days saved	115
Financial saving	**€118,272**	Financial saving	**€118,272**
OPD Discharges	6	**OPD Discharges**	30
Bed days saved	76	Bed days saved	384
Financial saving	**€ 64,512**	Financial saving	**€ 322,560**
Pulmonary Rehabilitation	34	**Pulmonary Rehabilitation**	14
Bed days saved	0	Bed days saved	0
Financial saving	**€ 391,707**	Financial saving	**€ 201,614**
Total Patients	134	**Total Patients**	136
Bed Days	**879**	Bed Days	**1160**
Financial saving	**€1,148,547**	Financial saving	**€1,179,382**

4.4 Quality Improvements

1) The provision of an outreach care package should impact greatly on Av LOS, rates of exacerbations & re-admission rates
2) Team offers a seamless transition from hospital to home using an individualised patient care package, with back up support of multidisciplinary teams in both community and secondary care centers thus improving integration of services.
3) Ongoing audit and research using both objective and subjective measurement tools for analysis, to improve models of care.

4.5 Potential Expansion of the service

Expansion of the programme as outlined below will be expected following an initial settling in period if the need is identified:

- Assisted Discharge Programme / NIV, new home O2 (Two visits in two weeks)
- Prevent Re-admission Programme for known patients.
- Delivery of Pulmonary Rehabilitation.
- COPD in-reach services for known patients.
- Attend Respiratory Outpatients.
- Ongoing research and development.

4.6 Introduction to Pulmonary Rehabilitation

Pulmonary Rehabilitation is defined "as evidence based multidisciplinary and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. Integrated into the individualised treatment of the patient, pulmonary rehabilitation is designed to reduce symptoms, optimize functional status, increase participation and reduce health care costs through stabilizing or reversing systemic manifestations of the disease. It includes strategies for life-long management.(1)

It is envisaged that Pulmonary Rehabilitation is a component of any COPD Outreach Service. Pulmonary Rehabilitation can be delivered from Hospital or the Community. Locations of current rehab sites is available in the directory of services on www.hse.ie/eng/copd/managementofstablecopd

A model of care requires a holistic patient centered approach to the provision of services to patients. It involves best practice through the application of a set of service principles across the health service. It identifies essential elements to ensure high quality service. These elements are the health system, the community, delivery system design, decision support, clinical outcome measures and self-management support. Evidence based concepts are required with each element in combination with productive interactions between informed patients and providers.

4.6.1 Overview of pulmonary rehabilitation programme

Improving the health of people through pulmonary rehabilitation creates a system that is proactive and focused on keeping a person as healthy as possible. The ethos of pulmonary rehabilitation accepts that a major impairment is present which cannot be improved by conventional medical treatment. This impairment is that of de-conditioning due to inactivity, mainly caused by breathlessness. The breathlessness leads to increased fear of exertion and avoidance of activity.

To maintain improvements, integration of services across the health sector to produce a range of community and hospital based services delivered by a multidisciplinary team (MDT) is required. Effective integration requires that:

- The role of the MDT members must be clearly defined to ensure a continuum of care.
- The role of the patients/consumers in participating and managing their own health is clearly defined in the principles of self management and support services.
- The GP / Consultant / Respiratory Team as the primary health provider have a number of key roles including the early identification and diagnosis and referral to specialist services such as pulmonary rehabilitation.
- The model can be applied to different health care settings.

4.6.2 The evidence based for pulmonary rehabilitation

Research shows that the benefits of pulmonary rehabilitation for patients with COPD are widely accepted. High levels of scientific evidence have demonstrated improved exercise capacity and health related quality of life and decreased breathlessness, fatigue and health care utilization following pulmonary rehabilitation. There is increasing evidence showing reduced health care utilisation, particularly bed days with evidence level 1 A (Cochrane review). There is also evidence for reduction in dyspnoea and improving quality of life and level 11B (Cochrane review) for reducing health care. Programs need to be embedded in evidence based guidelines relayed into daily clinical practice. All treatment decisions need to be based on proven guidelines supported by clinical research. Ongoing training is required for staff to remain up-to date on latest evidence. (1-6) pulmonary rehabilitation must meet the current standards for delivery.

4.6.2.1 Guiding principles

- Program provision by a Multidisciplinary Team, paying attention to the individual needs of patients and careers
- Inclusion of physical training, disease education, self-management, nutritional management, psychological, social and behavioral intervention.
- Reduction in symptoms and disability aiming to improve function and quality of life.
- Development of consistent protocols and pathways between health care providers

- Education and training of workforce to meet the needs of patients in the pulmonary rehabilitation program
- Continuous audit of effectiveness of the program.
- The detailed model for delivery of Pulmonary Rehabilitation can be found on www.hse.ie/eng/copd/managmentofstablecopd

4.6.3 Assisted Discharges

This service can be offered to patient who initially did not meet the inclusion exclusion criteria for an Early Discharge programme. These patients will have been in patients for over 72 hours, however are now in a position for discharge with one of the following:

1) First diagnosis/presentation of COPD
2) New LTOT
3) New to Portable Oxygen.
4) Need for domiciliary NIV
5) Previous poor compliance/understanding of treatments.

The team can offer patients an assisted discharge in these cases, i.e. two visits in two weeks. Aims would be to support and educate the patient and careers on the disease, medications and new treatments. In this way the team can also "troubleshoot" any potential problems/issues which could result in a re-admission.

Patient contacted within 24 hours of discharge and will assess the patient within one week of discharge. Contact numbers provided should the patient need to contact the Team.

Method of referral: From medical teams, patient must have had a Respiratory Physician review during their current admission.

Sample inclusion/ exclusion criteria

Inclusion	Exclusion
Diagnosis of COPD	History of Brittle Asthma
MMSE >7	Suspected Malignancy/TB
Systolic B/P >100mmHg	Pneumothorax/Pneumonia/PE
Room air ABG (or Prescribed O_2ABG if being Discharged on LTOT)	Uncont. LVF/Acute ECG changes
	Requires full time care/ Psychiatric Pt
pH > 7.35	Insufficient home care
PCO2 < 8kPa	Requires IV Therapies

PO2 >7.3kPa WCC 4 20*10/L New LTOT/Portable/NIV	IDDM

Figure 2*Adapted from BTS guidelines for HaH 2007*

Essentially this is a shortened contact time with the patient to ease transition home, yet all objective and subjective assessments should be made at visits. Once again visit numbers are patient driven/tailored; however the team should aim to discharge the patient back to the G.P. within 2 – 3 visits.

A detailed discharge summary will be forwarded to the patients G.P. once all visits have been completed indicating the patients response to the new treatments.

4.6.4 Prevent Re-Admission

Level of visits and contact should be guided as for the assisted discharge programme.

Patients must be known to the COPD Outreach Team.

4.6.4.1 Sample Criteria: OPD/Self /G.P. referral

- Reviewed by G.P and diagnosis made. Prescription of antibiotics and steroids,
- May require CXR/ABG in Team office to out rule pneumonia,
- Must be capable/competent of managing an exacerbation,
- Sufficient support s/homecare.

5 APPENDIX 1 – COPD OUTREACH FORMS

The following forms are available for use and can be adapted to local sites requirements.

1) COPD Outreach Services Referral Form

COPD Referral Form

2) COPD Outreach Assessment Form (Sample from Mullingar)

COPD Outreach Assessment Form

3) COPD Pulmonary Rehab Referral Form

Pulmonary Rehab Referral Form

4) COPD Pulmonary Rehab Assessment Form

Pulmonary Rehab Assessment Form

5) GP Discharge Letter

GP Discharge Letter

6) Day 14 Discharge Report

Sample Day 14 Discharge Report

7) COPD Performance Reporting Workbook

COPD Outreach Data Set for Collection.xls

8) COPD Patient Database

COPD Patient Database

6 APPENDIX 2 - MCID SCORES

6.1 ISWT:

The minimum clinically significant improvement for the ISWT is 47.5meters. In addition patients were able to distinguish and additional benefit at 78.7 meters

Singh et al thorax 2008

Outcome measure

- Improvement 47.5 meters means “slightly better”
- Improvement 78.7 meters represents “better” (Singh et al 2008)

6.2 MWT:

An MCID value for 6mwt has been identified as 54 metres

Outcome:

- Minimal improvement estimated at 35- 54meters (Redelmeier, 1997) (Puhan 2008)

Redelmeier DA, Bayoumi AM, Goldstein RS, Guyatt GH, Interpreting small differences in functional status: the six minute walk test in chronic lung disease patients. Am J respire Crit care med 1997; 155(4):1278-1282

6.3 Hospital anxiety and depression scale

MCID is around 1.5 in COPD patients corresponding to a change in baseline of around 20%

http://www.ncbi.nlm.nih.gov/pubmed/18597689

6.4 Chronic respiratory disease questionnaire

- Dyspnoea: 2.5 Fatigue: 2 Emotional Function: 3.5 Mastery: 2.
- Guyatt GH, Berman LB, Townsend M, Pugsley SO, Chambers LW.
- A measure of quality of life for clinical trials in chronic lung disease. Thorax 1987; 42: 773-778

6.5 St George’s respiratory questionnaire.

Measures clinical significant changes- 4 u is significant.

References:

Jones PW, Quirk FH, Baveystock CM. The St. Georges Respiratory Questionnaire. 1991 Resp.Med 85 ;(supplement B):25-31

6.6 Euroqual /EuroQol

EQ-5D is a standardised instrument for use as a measure of health outcome. Applicable to a wide range of health conditions and treatments, it provides a simple descriptive profile and a single index value for health status.

6.6.1 EQ-5D

Descriptive system of health-related quality of life states consisting of five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) each of which can take one of three responses. The responses record three levels of severity (no problems/some or moderate problems/extreme problems) within a particular EQ-5D dimension.

EQ-5D is designed for self-completion by respondents and is ideally suited for use in postal surveys, in clinics and face-to-face interviews. It is cognitively simple, taking only a few minutes to complete. Instructions to respondents are included in the questionnaire.

If you have already seen EQ-5D and/or decided to go ahead and use it, please register your study first by completing the EQ-5D registration form. The EuroQol Executive Office will then contact you by e-mail and inform you about the terms and conditions which apply to your use of the EQ-5D, including licensing fees (if applicable). Please allow 3 working days to receive this reply.

Licensing fees are determined by the EuroQol Executive Office on the basis of the user information provided on the registration form. The amount is dependent upon the type of study, funding source, sample size and number of requested languages. You are not obligated to purchase by registering.

Please note that without the prior written consent of the EuroQol Executive Office, you are not permitted to i.e. use, reproduce, alter, amend, convert, translate, publish or make available in whatever way (digital, hard-copy etc.) the EQ-5D and related proprietary materials.

6.6.2 How to use EQ-5D

The EQ-5D self-report questionnaire (EQ-5D) essentially consists of two pages comprising the EQ-5D descriptive system (page 2) and the EQ VAS (page 3). There is also an optional page of demographic questions. There is also an extended version of EQ-5D that incorporates the valuation task but this is only used for valuation studies and is not relevant for clinical users.

EuroQoL in assessment of the effect of pulmonary rehabilitation COPD patients

Contact information

EuroQol Group Executive Office
Marten Meesweg 107

3068 AV Rotterdam
The Netherlands

E-mail: EuroQol User Information Service
KvK-nummer: 41121799

www.**euroqol**.org/

Authors
By: Ringbaek,T., Brondum,E., Martinez,G., Lange,P.
Published
31-10-08
Journal
DA - 20081117IS - 1532-3064 (Electronic)IS - 0954-6111 ...

6.7 CATS

2 point change clinically significant

Reference:

Jones PW, Harding G, Berry P, et al Development and first validation of the COPD Test. Eur Respir J 2009;34:648-54

7 Appendix 3 – Performance Measurement

7.1 Statistics requiring collection for COPD Outreach

COPD OUTREACH MONTHLY STATISTICS	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Total
Number of Assessments													
ED													**0**
AMAU													**0**
PIPE													**0**
Ward													**0**
OPD													**0**
Pulmonary Rehab (if appropriate)													**0**
Oxygen (if appropriate)													**0**
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Number of Discharges													
Early													**0**
Assisted													**0**
OPD													**0**
Prevent re-admit													**0**

TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Home Visits													0
Number of COPD TEAM reviews within two weeks of ESD.													0
Number of Re-exacerbations													0
Number of Patients with failed discharge to EDS													0
Number of Referral to OPD													0
Number of Readmits													
Mean Length of Stay for COPD Outreach Discharge patient Numbers of Patients (assessed by spirometry) referred by Gold Stage Level I – Gold Stage Mild Level II – Gold Stage Moderate Level III – Gold Stage Severe Level IV – Gold Stage Very Severe Number fo patients (assessed by spirometry) accepted by Outreach by Gold Stage Level I – Gold Stage Mild Level II – Gold Stage Moderate Level III – Gold Stage Severe Level IV – Gold Stage Very Severe													

7.2 Key Performance Indicators

	Measure	Baseline	Actual	Target	Variance	Reason for Variance	Comments
COPD Outreach Service Outcome Measures	**Type**	**2010**	**2011**	**2011**			
No of COPD Discharges - ALL (primary diagnosis/excluding day cases) [ICD10 J40-J47 >35years: Source HIPE]	**National**			20%			
Mean Average length of stay (ALOS) for COPD Discharge - ALL [ICD10 J40-J47 >35years:Source HIPE]	**National**			(-) 1 days			
No of patients discharged under COPD Outreach as % of ALL Discharged for COPD [ICD10 J40-47 >35years: SOURCE HIPE]	**Local**			20%			
Mean Average Length of Stay (ALOS) for COPD Outreach Discharges	**Local**						
Difference in mean ALOS for COPD Outreach Discharge compared with COPD Discharge-ALL ALOS [ICD10 J40-47>35 years: Source HIPE and Outreach Statistics]	**Local**			(-) 1 days			
No of patients referred to COPD Outreach as % of COPD Discharge - ALL (ICD10 J40-J47 >35years:SOURCE LOCAL)	**Local**						
No of patients assessed as % of patients referred to COPD Outreach Service	**Local**						

Ave number of visits per patient accepted into COPD Outreach Service	**Local**						
Quality of life score for patients discharged through COPD Outreach Service (Average EUROQUAL/BORG Score)	**Local**						

8 Appendix 4: References

8.1 References for COPD Outreach Proposal

Ahmedzai, S., (2004) Terminal care in non-malignant, end-stage disease – how can we improve it? *Journal of The Royal College of Physicians,* 34, 137 – 143.

American Lung Association (2008) Trends in COPD (Chronic Bronchitis and Emphysema): Morbidity and Mortality, Epidemiology and Statistics Unit Research and Programme Services December 2007.

(Accessed online http://www.lungusa.org/atf/cf/{7a8d42c2-fcca-4604-8ade-7f5d5e762256}/COPD_DEC07.PDF, (28th January 2009).

Annesi Maesano, I. (2006) Increasing COPD awareness, *European Respiratory Journal,* 27, 833 – 852.

Bourbeau, J., Julien, M., Maltais, F., Rouleau, M., Beaupré, A., Bégin, R., Renzi, P., Nault, D., Borycki, E., Schwartzman, K., Singh, R., and Collet, J.(2003) Reduction of Hospital Utilization in Patients With Chronic Obstructive Pulmonary Disease, *Archives of Internal Medicine*, 163, (5), 585-591.

Bourbeau, J., Collet, J., Schwartzman, K., Ducruet, T., Bradley, C., and Nault, D. (2006) Economic Benefits of Self-Management Education in COPD, *Chest*, 130, 1704-1711.

Bourbeau, J. (2008) Impact on patients' status following early identification of a COPD exacerbation, *European Respiratory Journal*, 30, (5), 907-913.

Buist, A.S., Mc Burnie, M.A., Vollmer, W., Gillespie, S., Burney, P., Mannino, D., Menezes, A., Sullivan, S., Lee, T., Weiss, K., Jensen, R., Marks, G., Gulsivk, A. and Nizankowska – Mogilnicka, E. (2007) International variation in the prevalence of COPD (the BOLD Study): a population – based prevalence study, *Lancet,* 370, 741 – 750.

Brennan, N and O' Connor, T. Irish Thoracic Society. (2003) *Ireland Needs Healthier Airways and Lungs – the Evidence,* INHALE Report.

Brennan, N., Mc Cormack, S and O' Connor, T. Irish Thoracic Society (2007) *Ireland Needs Healthier Airways and Lungs – the Evidence,* 2nd Edition, INHALE Report.

British Thoracic Society. (1997) Guidelines on the management of chronic obstructive pulmonary disease. The COPD Guidelines Group of the Standards of Care Committee of the BTS, *Thorax:* 52 (Supplemental), S1-S28.

British Thoracic Society Guideline Development Group (2007), Intermediate care – Hospital-at-home in chronic obstructive pulmonary disease: British Thoracic Society Guideline, *Thorax,* 62, 200 – 210.

Cancer Research UK.
Http://info.cancerresearchuk.org/cancerstats/types/lung/smoking/. (accessed 30th January 2009).

Calverley, P. (2004) foreword to the first edition in Dr David Bellamy and Rachel Booker (Eds) *Chronic Obstructive Pulmonary Disease in Primary Care. All you need to know to manage COPD in your practice*, 3rd edn, Class Publishing, London, National Respiratory Training Centre, The University of Liverpool, 11 – 12.

Cassas, A., Troosters, T., Garcia-Aymerich, J., Roca, J., Hernández, C., Alonso, A., del Pozo, F., de Toledo, P., Antó, J.M., Rodriguez-Roisin, R., and Decramer, M. (2006) Integrated care prevents hospitalisations for exacerbations in COPD patients, *European Respiratory Journal*, 28, 123-130.

Corden, Z.M., Bosley, C.M. and Rees, P.J. (1997) Home nebulised therapy for patients with COPD: patients' compliance with treatment and its relation to quality of life, *Chest*, 112, 1278 – 1282.

Cote, C., Dordelly, L. and Celli, B.,(2007) Impact of COPD Exacerbations on Patient-Centered Outcomes, *Chest*, 131, 696-704.

Coultas, D., Frederick, J., Barrnett, B., Singh, G. and Wludyha, P. (2005) A Randomized Trial of Two Types of Nurse-Assisted Home Care for Patients With COPD, *Chest*, 128, 2017-2024.

Davies, L., Wilkinson, M., Bonner, S., Calverley, M. A. and Angus, R.M. (2000) "Hospital at Home" versus hospital care in patients with chronic obstructive pulmonary disease: prospective rand trial, *British Medical Journal*, 321, (7271), 1265-1268.

Department of Health and Children (2001) *Primary Care- A New Direction,* The Stationary Office, Dublin.

DiMatteo, M. R. (2004) Variations in patients' adherence to medical recommendations: a quantitative review of 50 years of research, *Medical Care*, 42, 200 – 209.

Donohue, J.F., van Noord, J.A. and Bateman, E.D. (2002) A 6 – month placebo controlled study comparing lung function and health status changes in COPD patients treated with Tiotropium and salmeterol, *Chest,* 122, 47 – 55.

http://www.ecrhs.org/Home.htm. (Accessed 24th January 2009).

http://www.european-lung-foundation.org/index.php?id=55 . (Accessed 24th January 2009).

Elkington, H., White P., Higgans R. and Johnson Pettinari C (2005), The Health Care needs of Chronic Obstructive Pulmonary Disease patients in the last year of Life, *Palliative Medicine,* 19(6), 485 – 491.

http://www.esri.ie/health_information/latest_hipe_nprs_reports/2006/HIPE_2006. (Accessed 21st January 2009).

http://www.esri.ie/health_information/latest_hipe_nprs_reports/2004/HIPE_2004 .

(Accessed 21st January).

http://www.esri.ie/health_information/hipe-data-reporter/prepare-report/report/.xml . (Accessed 21st January 2009).

Fletcher C., and Peto R. (1977) The natural history of chronic airflow obstruction, *British Medical Journal,* 1, 1645 – 1648.

The Global Initiative or Chronic Obstructive Lung Disease, (2007) *Pocket guide to COPD Diagnosis, Management and Prevention: A guide for health care professionals,* Updated 2007, GOLD Guidelines, National Heart, Lung and Blood Institute and World Health Organisation.

Government of Ireland (2003) Data Protection Acts 1988 and 2003 (on line). Available http://www.irishstatutebook.ie/2003/en/act/pub/0006/index.html (accessed 21 Feb 2009).

Gravil, J.H., Al- Rawas O.A., Cotton, M.M., Flanigan, U., Irwin, A., and Stevenson, R.D. (1998) Home treatment of exacerbations of chronic obstructive pulmonary disease by an acute respiratory assessment service, *Lancet,* 351, (9119), 1853-1855.

Gulsvik, A., Boman G., Dahl R., Gislason T and Nieminen (2006) The Burden of Obstructive lung disease in the Nordic countries, *Respiratory Medicine,* 100 (Supplemental 1), S2 – S9.

Halbert, R.J., Isonaka, S., George, D. and Igbal, A. (2003) Interpreting COPD prevalence estimates: what is the true burden of the disease?, *Chest,* 123, 1684 – 1692.

Health Service Executive (2006) *Transformation for Change*, Health Service Executive, Stationary Office, Dublin.

Health Service Executive (2008) *4.1 Chronic Illness Framework, HSE Transformation programme,* Health Service Executive, Stationary Office, Dublin.

Hermiz, O., Comino, E., Marks, G., Daffurn , K., Wilson, S. and Harris, M. (2002) Randomised controlled trial of home based care of patients with chronic obstructive pulmonary disease, *British Medical Journal*, 325, 938-948.

Institute of Public Health in Ireland (2001) *Report of the Working Group on the National Anti- Poverty Strategy,* Institute of Public Health, Dublin, Published 8th April 2008.

Janson, C., Gislason T., Suppli Ulrik C., Nieminen, M., Hallin R., Lindberg E., Gudmundsson G., Aine T and Bakke P. (2006) Characteristics of hospitalised

patients with COPD in the Nordic countries, *Respiratory Medicine,* 100 (Supplemental 1), S10 – S 16).

Kessler, R., Ståhl, E., Vogelmeier, C., Haughney, J., Trudeau, E., Löfadahl, C. and Partridge, M. (2006) Patient Understanding, Detection, and Experience of COPD Exacerbation, *Chests,* 130, 133 – 142.

Mannino, D. (2005) Chronic obstructive pulmonary disease in 2025: where are we headed?, *European Respiratory Journal,* 26, 189.

Murphy, N., Byrne, C., Costello, R.W. (2002) An early supported discharge programme for patients with exacerbations of chronic obstructive pulmonary disease (COPD) in Ireland, *The All Ireland Journal of Nursing and Midwifery*, 2, (2), 30-34.

National Heart, Lung, and Blood Institute, *What causes chronic obstructive pulmonary disease (COPD).*

www.nhlbi.nih.Gov/health/dci/diseases/Copd/Copd_causes.html. (Accessed on line 20th Jan 2009).

National Heart, Lung, and Blood Institute, Bethesda, M.D., (2000) *Morbidity and mortality 2000: chart book on cardiovascular, lung, and blood diseases.* National Institutes of Health, National Heart, Lung and Blood Institute, May 2000.

National Collaborating Centre for Chronic Conditions, (2004) Chronic obstructive pulmonary disease: National clinical guideline on management of chronic obstructive pulmonary disease in adults in primary and secondary care, *Thorax,* 59 (Supplement 1), 1-232.

National Institute For Clinical Excellence (2004) Chronic obstructive pulmonary disease; Management of chronic obstructive pulmonary disease in adults in primary and secondary care, *Clinical Guideline 12,* National Collaborating Centre for Chronic Conditions, London.

Office of The Attorney General (2002) *Public Health (Tobacco) Act 2002, (Section 47), Regulations 2003,* Stationery Office, Dublin.

Office of Tobacco Control (2007) Annual Report, Dublin, Ireland.

Pauwels, R., Calverey, P.and Buist, A.S. (2004) COPD exacerbations: the importance of a standard definition, *Respiratory Medicine,* 98, 99 – 107.

Ram, F.A.F., Wedzicha, J.A., and Wright, J. (2004) Hospital at home for acute exacerbations of chronic obstructive pulmonary disease: systematic review of evidence, *British Medical Journal*, 329, 315-318.

Seemungal, T.A., Donaldson, G.C., Paul, E.A., Bestals, J.C., Jeffries, D.J. and Wedzicha, J.H. (1998) Effect of exacerbation on quality of life on patients with chronic obstructive pulmonary disease, *American Journal of Critical Care Medicine*, 157, 1418-1422.

Soler, N., Torres, A., and Ewig, S., (1998) Bronchial microbial patterns in severe exacerbations of chronic obstructive pulmonary disease (COPD) requiring mechanical ventilation, *American Journal of Respiratory Critical Care Medicine,* 157, 1498-1505.

Skwarska, E., Cohen, G., Skwarski, K.M., Lamb, C., Bushell, D. and Parker, S. (2000) Randomized controlled trial of supported discharge in patients with exacerbations of chronic obstructive pulmonary disease, *Thorax*, 55, (11), 907-912.

Sridhar, M., Taylor, R., Dawson, S., Roberts, N. and Partridge, M. (2008) A nurse led intermediate care package in patients who have been hospitalised with an acute exacerbation of chronic obstructive pulmonary disease, *Thorax*, 63, 194-200.

Statistics .http:// www.statistics.library.thinkquest.org/17360/text/tx – e – pod.html. (Accessed 30th January 2009).

Tashkin, D.P., Clark, V.A., and Coulson, A.H., (1983) Comparison of lung function in young non-smokers and smokers before and after initiation of the smoking habit: a prospective study, *American Review of Respiratory Diseases,* 128, 12 – 16.

Turner, J., Wright, E. and Mendella, L. (1995) Predictors of patient adherence to long- term home nebulizer therapy for COPD. The IPPB Study Group. Intermittent Positive Pressure Breathing, *Chest*, 108, 394 – 400.

World Health Organisation (1988) Tobacco Free Initiative. (Accessed on line, http://www.who.int/tobacco/research/cessation/en/index.html. 31st January 2009)).

World Health Organisation, (1996) Tobacco alert 1996. *World No-Tobacco Day Special Issue.* Geneva, Switzerland: World Health Organization, 1 – 28.

World Health Organisation: Murray, C.J.L., and Lopez, A.D. (1996) *Global health statistics: a compendium of incidence, prevalence and mortality estimates for over 200 conditions.* Geneva, Switzerland: World Health Organisation.

World Health Organisation: *Chronic Diseases and Health Promotion*, WHO, Geneva, Switzerland. (Accessed on line, http://www.who.int/chp/en/, (24th October 2008)).

World Health Organisation. Adherence to long term therapies: policy for action. Meeting report 4 – 5 June 2001. (Accessed on line, http://www.who.int/chronic_conditions/adherence/en/index.html, (24th January 2009)).