

East Lincolnshire Chronic Obstructive Pulmonary Disease Service

Managing patients across the care pathway

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The King's Fund and The Commonwealth Fund

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Summary Information

Target population

All patients with chronic obstructive pulmonary disease (COPD) within East Lincolnshire primary care trust (PCT).

Eligibility requirements

- Patients registered with general practices providing enhanced care to patients with mild or moderate COPD
- Moderate and severe patients with complex medical and nursing needs receiving targeted care from a multidisciplinary specialist team within the community (Inspire team).

Size of the programme and persons served

The service covers the whole East Lincolnshire PCT population of 280,000 patients in a mixed rural and urban setting covering 900 square miles.

Enrolment strategies

- Screening and diagnosis of patients with COPD within primary care.
- Primary care clinician referrals for specialist advice to the Inspire team (*see below*).
- Referral also from hospital specialists for patients requiring specialist support in the community.

Payment structure

Two locally enhanced services have been developed: one to support diagnosis and treatment in general practice; the other providing care for more vulnerable and high users of the health service – that is, at-risk patients. Both are funded through the locally enhanced services budget of the new General Medical Services (GMS) contract.

General structure of the programme, care management responsibilities etc

- Practice-based enhanced care to improve diagnosis and early treatment
- Specialist team providing care throughout care pathway, including in-reach to hospital care and provision of intermediate care services for patients with COPD.

Length of operation

- Three-phase programme commenced in 2000. Third-phase implementation commenced 2005.
- Now commissioned as a core service.

Programme goals

To provide an integrated, patient-focused service, delivering efficient, high-quality, evidence-based care to patients with COPD in Lincolnshire

Initial cost savings

- £345,000 owing to decreased hospital admissions
- Projected from full implementation of model: £670,000.

Programme description

Chronic obstructive pulmonary disease (COPD) is a high priority within East Lincolnshire because of its local prevalence – up to 6 per cent in some of the coastal towns of Lincolnshire. The high prevalence reflects an inflow of people from the industrialised Midland towns retiring to the area, resulting in a higher than average elderly population (22 per cent of people are older than 65 years of age) from lower socioeconomic classes. In addition, the quality of care for COPD was variable and local participation in the national Primary Care Collaborative provided a vehicle to initiate the programme. The programme was divided into three phases to ensure a systematic approach.

- **Phase one** Patients were identified and screened for COPD within spirometry clinics.
- **Phase two** Clinicians were trained to manage COPD and specific COPD clinics were set up within GP practices. Patients were identified for referral to secondary care for specialised treatments, such as pulmonary rehabilitation, long-term oxygen assessment, and surgery for lung volume reduction. Evidence-based guidelines for the care and management of COPD were compiled into a site file. An educational pathway provided additional support to all clinicians in primary care. This programme was facilitated by clinical leaders in both primary and secondary care. Primary care clinicians with a specialist interest in respiratory disease worked with hospital clinicians to formulate the programme and to support other clinicians within primary care in developing better care and management. The method of support included regular visits by a combined primary and secondary specialist team and attendance at clinical forums, open to all health professionals participating in the programme.
- **Phase three** A specialised COPD intermediate care team called 'Inspire' was established, spanning primary and secondary care. The team aimed to support patients throughout the care pathways within the health community of East Lincolnshire. The team supported both patients and primary care clinicians in the recognition and management of COPD.

The Inspire team was a stand-alone specialist team, employed by East Lincolnshire PCT. It also integrated with other services, including generic community services, general practice, intermediate care, emergency services, social services and the voluntary sector.

Within East Lincolnshire PCT, specialist practitioners were considered best placed to design robust care pathways, while also providing operationally enhanced specialist care. However, within this framework, the integration of all services within the health economy was considered essential to holistic patient care.

The Inspire team provided a specialist rather than a generic form of case management. The specialist community-based clinicians within the team provided enhanced care to patients while still ensuring appropriate referrals to other services. Thus, case management and care co-ordination were incorporated within individual posts, but the team did not aspire to respond to every clinical need. Other services were brought in when needed, recognising that excellent communication was required between different teams

The Inspire team in East Lincolnshire has since become the beacon chronic disease management service in East Lincolnshire. Heart failure and diabetes teams are now modelled on this team and with time it is expected that working arrangements and communication pathways will become more effectively integrated. The similarities in structure and working practices will facilitate this goal.

Enrolment methods/eligibility/selection process

Phase one and phase two of the programme were designed to improve diagnosis and primary care management of COPD. Phase three was designed to improve the management of more vulnerable patients who were high users of the system. Commonly these were the patients who were experiencing regular acute exacerbations of COPD. Care pathway analysis indicated that many of these patients were not receiving optimal care for their acute exacerbations within primary care. Indeed, many patients were experiencing avoidable hospital admissions. In addition, many of these patients were not picked up following hospital discharge and reviewed by either primary or secondary care services.

The multidisciplinary Inspire team was established to deal specifically with these issues and to establish an alternative pathway for patients suffering from acute exacerbations through a modified hospital-at-home service (*see below* for further details). Access to this service was open to all clinicians within the health community, whether in primary or secondary care, and to all patients already known to the service. An agreed patient assessment protocol was developed (*see Appendix 1*). Once patients were referred to the team, there were agreed protocols and pathways for integrating their care with primary care and, in particular, general practice. A locally enhanced service (LES 1), which upgrades practice-based care and the service provided by the clinical nurse adviser has facilitated this process.

Specific services provided by this team include:

- training and support to primary care clinicians
- acute respiratory assessment service that can be accessed by any clinician within the health economy and by patients identified within the case load
- assisted discharge service
- case management service
- community-based pulmonary rehabilitation
- mental health support for patients with severe COPD
- palliative care service for patients with end-stage COPD
- oxygen assessment within the community
- triage of secondary care referrals.

Involving patients in care

Patients/carers have been involved in various ways within the service.

Focus groups

The successful adoption of the model for COPD care developed for East Lincolnshire, has now been adopted throughout Lincolnshire county. As part of this process, a focus group of patients and carers was established to ensure that the model designed was responsive to patients and carer needs. The group was also used to identify questions for a patient-satisfaction questionnaire to provide ongoing feedback on the implementation of the strategy.

Expert-patient programmes/patient support groups

Patients with COPD within East Lincolnshire have been specifically targeted to receive information on the expert-patient programme. A number of sites in East Lincolnshire are establishing patient self-help groups, including 'breathe easy groups'.

Patients as educators

Patients with COPD have provided educational sessions to clinicians at countywide study sessions and to their peers within East Lincolnshire, on pulmonary rehabilitation programmes.

Managing patients with co-morbidities

Most of the clinicians in the Inspire team are primary care clinicians with generalist skills and knowledge about common conditions. In addition they work as care co-ordinators, referring patients to other health and social care agencies when necessary.

This process has been facilitated by:

- co-ordination between the clinical and care leaders of all stakeholder agencies at a strategic level
- agreed referral pathways between agencies. These referral criteria related to the relationships between GP practices, the Inspire team and secondary care. In addition there are referral criteria established between the Inspire team and both social care agencies and community-based health services, for example, intermediate care team (consisting of joint health and social care professionals)
- joint educational events for all health and social professionals working within the health economy.

How is prevention being addressed in the management of the chronically ill?

COPD is one of the diseases covered by the new primary care Quality and Outcome Framework, for which GPs are incentivised to improve the diagnosis, management and monitoring of symptoms. In addition, a specific locally enhanced service has been established to provide a higher level of care for patients with COPD within practices (LES 1). Practices agree to identify and target patients with COPD and to provide evidence-based treatment interventions as per locally agreed guidelines (adapted from the National Institute of Health and Clinical Evidence (NICE) guidelines for COPD 2004).

Quarterly audits are undertaken by participating practices to review:

- the number of patients seen in COPD clinics
- numbers of patients with severe COPD who have had pulse oximetry performed
- the number of patients referred for specialist services, including referrals for assessment for oxygen and pulmonary rehabilitation
- the number of patients who have been admitted for an acute exacerbation of COPD.

Practices must also identify a lead clinician for COPD who has had specialist training in this disease area. Each practice must attend a regular clinical forum to quality for LES 1 payments. They must also participate in a six-monthly practice visit by the nurse consultant and the GP with special interest, to assess the quality of the service and to strengthen communication between GP practices and the Inspire team. A nurse adviser liaises with practices and provides support and mentoring to clinicians who wish to develop better systems of care within their practices for patients with COPD.

Primary and secondary care interface arrangements

The East Lincolnshire COPD programme has been developed and influenced by clinical champions from both primary and secondary care. The initial drive to the programme was to

enhance the care of patients with COPD within primary care. Practices that have participated in the programme have had regular practice visits from a team comprising both primary and secondary care clinicians. This has helped to foster good working relationships across the health economy and created the opportunity to provide a fully integrated programme that spans the length of the care pathway.

Environmental and political context

Over the past five years, several factors have aided the development of the East Lincolnshire PCT COPD programme. King's Fund work on the impact of COPD admissions and its correlation with the population of East Lincolnshire provided a political platform from which to launch the service. There were geographical inequities for patients wanting to access with some postcode-linked restriction on eligibility.

Particularly important was participation in the national primary care collaborative, which provided an environment to develop a phased, ground-up approach to developing COPD services across the health economy. Indeed the collaborative approach has resulted in establishing firm relationships between all clinicians across primary and secondary care.

A key objective of the programme was to develop primary care based services and shift the emphasis of the provision of care from secondary to primary care. Interestingly, this early objective is now congruent with both the national Public Services Agreement and with the recently published White Paper. The Long Term Conditions (LTC) strategy of the Department of Health has helped to raise the profile of COPD. However, the emphasis on the appointment of community matrons working in a generic role is a different model to the community specialist team approach adopted by the Inspire team. This has resulted in PCT investment in resources being targeted at generic community matrons rather than specialist clinical teams, although it is the contention of the Inspire team that these approaches are not mutually exclusive. The Inspire model is a unique service that, to the best knowledge of the authors, has not been replicated within the National Health Service (NHS) or in the US. Most specialist multidisciplinary teams are modified secondary-based services outreaching into the community, rather than a service based in primary care and staffed and run by primary care clinicians.

Clinical governance/performance management

The whole programme is monitored by a senior management group comprising the clinical leaders of the Inspire team, the director of provider services for East Lincolnshire PCT, senior clinicians from secondary care and an associate director for medical services from the Secondary Care Trust. This group oversees and performance manages the programme. In addition the clinical leaders of the Inspire team report on a regular basis to the Professional Executive Committee of the PCT, the COPD countywide strategy group and the Long Term Conditions strategy group.

Financial arrangements

Practices providing enhanced COPD care receive an enhanced service payment for providing a weekly COPD clinic run by a practice nurse at band 6. They may also receive equipment, including a spirometer, a pulse oximeter and funds for maintenance and consumables for the equipment. They receive payment on a quarterly basis after submitting their quarterly audit of activity.

The Inspire team itself (as apposed to enhanced work in general practice) is funded via GMS monies through a second locally enhanced service agreement (LES 2). Initially, the payments from the LES 2 were divided into four areas of care:

- acute respiratory assessment service (ARAS)
- assisted discharge service
- post-admission six-weekly review service
- case management service.

The attached document lays out the basis for the payments accrued to each service encounter (Appendix 2). None of the practices in the area tendered for three subsections of the LES 2 and only seven tendered for the six-weekly review sections. This, in effect, allowed the money allocated for the LES 2 to be used to fund the Inspire team.

The Inspire team now plans to offer its services through a different type of contract – specialist primary medical services (SPMS). This will provide a robust funding model to ensure that sustainability of the team work is under way to develop primary care tariffs to reflect the work of the Inspire team.

Quality improvement

The COPD programme was developed to improve the management of patients across the care pathway. To ensure equity of access across the health community, standardised guidelines and referral protocols have been agreed. Innovative IT packages been developed to streamline the care and auditing processes. Thus, participating practices have had bespoke computer packages provided in collaboration with the PRIMIS managers (IT specialists) from the primary care trust. This package includes a search program to identify at-risk patients, a computer template for COPD clinics and a Miquet (computer audit) program for quarterly audits of activity and referrals. In addition, the Inspire nurse adviser works on a rolling programme with selected practices to facilitate development of both COPD and asthma services within the practice. In conjunction with a specialist IT company the Inspire team are developing a Miquet-based practice audit tool to identify deficiencies of care in practices and to monitor change.

A software program has been developed to provide contemporaneous notes for the day-to-day management of patients within the caseload.

Admission to hospital for an acute exacerbation of COPD is considered an adverse event by the team and all patients who have experienced a COPD admission are followed up by the team after discharge.

Role of health care professionals

Recruitment to the Inspire team aimed to bring in clinicians with a strong primary care background who would be familiar with the environment in which the team operates. Consequently, most of the teams' clinicians have a generalist background with evidence of competency in managing respiratory disease. There was no national template for these innovative posts, at it was acknowledged that team members would have to be selected on a 'best fit' basis and that further training and educational support would need to be offered, tailored to each person's particular needs. The benefit of this approach is that team members have backgrounds in various chronic diseases, with spin-off benefits in managing co-morbidities.

The team includes:

- GP with special interest in respiratory medicine (nine sessions per month)
- respiratory nurse consultant (1 whole-time equivalent (WTE))
- consultant in psychological medicine (four sessions per month)
- specialist respiratory physiotherapist (1 WTE)
- specialist respiratory nurses (4.1 WTE)
- specific practice-based nurse adviser (1 WTE)
- physiotherapy technician (1 WTE)
- administrative staff (2 WTE).

Specific learning needs that were addressed as the service has been developed have included:

- prescribing knowledge and medicines management – nurses and physiotherapist
- clinical assessment skills
- specific respiratory training
- palliative care training
- dietetic training.

Professional and organisational input

As noted previously, the role of the health care professional is pivotal in ensuring the success of the respiratory services to patients with COPD. But partnerships with NHS managers have also been crucial for the rapid development of the service.

The countywide COPD group has a strategic role in developing countywide COPD services. Its membership comprises clinicians and managers from both primary and secondary care of the three individual trusts in Lincolnshire. This group is tasked with developing COPD service specifications and facilitating service re-engineering for COPD. The countywide guidance is transferred to each PCT for local implementation and performance management. The group liaises with other relevant countywide groups, for example, long-term conditions and palliative care groups.

Communications/IT and data analysis support for the service

Currently there are many IT systems within the NHS. Both primary and secondary care, emergency services and social services use independent communication systems, which are unable to communicate with each other or indeed integrate with any other system. The NHS awaits the national program for IT; however, a fully integrated IT system will not be available for some years.

To allow communication within the team, the Inspire team has been forced to develop its own IT support system and communication methods and information from the team is shared with other providers in various ways. A 'stand alone' IT software program, is currently being piloted, which supports the clinical record, generates letters to other providers and generates performance reports about the teams' activities. It has the capacity to allow password-protected, web-based access to patient records for selected health professionals; however, there are still governance issues regarding confidentiality and patient consent before this system can be fully operational.

Until these issues have been addressed, the Inspire team has provided patients with 'hand-held' paper records. Patients are encouraged to use these records when consulting other

health care professionals as a means of enhancing communication between different providers.

As part of the ongoing development of the service, vulnerable COPD patients who are prone to exacerbations will be made known to the emergency services. Using the Adastra IT program, these patients will be 'flagged-up' on the system. On receipt of an emergency call, the pre-programmed information will be highlighted on the screen, thus prompting emergency services personnel to seek out the patient's records on arrival at the patient's home. The team also employs the traditional methods of communicating via letters, faxes and emails.

Ongoing analysis is provided in various ways. The team uses the informatics department at the PCT. Retrospective admission data is provided on a monthly basis. These patients are cross referenced and the exit diagnoses are validated by both visits by the team and through the GP databases. As part of the performance management and reporting commitment of the team, monthly activity statistics are provided to the PCT, which include: numbers of COPD admissions avoided, numbers of home visits and numbers of patient-related telephone calls.

Outputs and evaluation of outcomes

Primary outcome measures are reduction of admissions, re-admission rates and length of stay. Secondary outcomes measures include quality of life indicators and mortality data. Outcome measures are collected from various sources.

Hospital-based audit

- Admissions for acute COPD
- Re-admission rates
- Hospital bed days for acute exacerbations of COPD.

Practice-based care

- Numbers of COPD patients
- Diseases register of patients' categorised by severity
- Number of hospital admissions in last year per practice
- Number of patients with an MRC score of 3+
- Number of referrals to pulmonary rehabilitation.

Inspire team audits

- Number of patients on case load
- Number of home visits
- Number of telephone encounters
- Number of acute exacerbations managed at home
- Number of admissions for acute exacerbations

As well as the above, the 'softer' outcomes of this innovative way of working are detailed below.

- There is now an effective and shared approach to the care of COPD between primary and secondary care. Clinical forums exist where professionals from across the health community can meet and impact on the delivery of the programme.
- The team works specifically at the primary–secondary interface and has developed clinical protocols in collaboration with secondary care clinicians.
- Collaborative working with paramedics and emergency care practitioners.

- A locally enhanced service for COPD, provided by practices has been established. To date 34 out of the 37 practices have signed up to provide this service.

Preliminary results

- There was a *23 per cent* decrease in COPD admissions to the local hospital in 2003 compared with 2000, at a time where most hospitals saw an increase (see British Thoracic Society (BTS) abstract).
- This would equate to a cost saving of £330,000 for an investment of £116,000 for implementation of this part of the programme. Costs included monies paid to practices for participation in the primary care collaborative; pharmaceutical company bursaries and the 'secondment' of a nurse adviser who was directly employed by the company.
- Referral patterns to secondary care also showed some interesting outcomes. Although East Lincolnshire PCT comprises *42 per cent* of the total population of Lincolnshire as a county, referrals to secondary care chest clinics only account for *22 per cent* of the total.
- The activity of the Inspire team in providing enhanced community services resulted in 183 acute exacerbations of COPD being managed over a 10-month period (April 2005 to January 2006) within the community.
- This would equate to a cost saving of £428,220 (length of stay at nine days × £260 per bed day) for an investment of £212,500 (part-year effect).
- This outcome is on track to deliver the projected benefits of reducing hospital admissions for acute COPD by 50 per cent.
- Re-admission rates for East Lincolnshire are currently only 7.8 per cent as opposed to national figures of 30 per cent.

Appendix 1: Assessment criteria for ARAS/assisted discharge service (Inspire team)

Mandatory indicators

- Definitive clinical diagnosis of acute exacerbation of COPD (AECOPD)
- No evidence of acidosis (pH >7.35)
- Pa_{O₂} >8 kPa on ≤28 per cent O₂ (unless agreed by respiratory registrar/consultant)
- No confusion
- Level of consciousness normal
- Social circumstances suitable (consider arranging intermediate care or social services support)
- Not on intravenous medications
- All co-morbidities treated and stable, for example diabetes, heart failure etc.

Preferable indicators

- Respiratory rate <30 at rest
- Heart rate <100 at rest
- Temperature <38 °C

Appendix 2: Economics of COPD care in East Lincolnshire (supporting document for COPD locally enhanced service level 2)

Present situation

East Lincolnshire PCT COPD programme

In 2001 East Lincolnshire PCT implemented a whole-systems approach to developing COPD services within its locality. The initial drive to this programme was motivated by involvement in the primary care collaborative. Five practices piloted a planned programme of targeting suspected COPD patients for spirometry for confirmation of diagnosis. A team of clinicians from primary and secondary care helped to design the programme and subsequently provided ongoing support to the practices. An education package was available for each participating practice. In each practice chronic respiratory clinics were funded by the PCT. In late 2001, nine further practices joined this programme.

The programme was divided into three phases to ensure a systematic approach. The first phase looked at identifying patients and screening them for COPD within spirometry clinics. The second phase concerned training clinicians to manage COPD and setting up specific COPD clinics within the practices. Patients were identified for referral to secondary care for specialised treatments, such as pulmonary rehabilitation, long term oxygen assessment, and surgery for lung volume reduction. Phase three is in the implementation stage. This phase is concerned with the setting up of a specialised COPD intermediate care team spanning primary and secondary care. This liaison will provide the environment to allow patients to be managed at home for their acute exacerbation of COPD. They will also have a role in supporting practices in delivering high-quality care to patients with COPD. The team will be of a multidisciplinary nature headed by a nurse consultant and GP with specialist interest, consisting of clinicians providing physiotherapy, dietetics, palliative care, specialist nursing care and mental health provision.

Under the new GMS contract, and using the above model, East Lincolnshire has developed a locally enhanced service for COPD, provided by practices throughout the locality. To date 26 out of the 38 practices have signed up to provide this service.

Despite the fact that the programme is only now entering its third phase, impressive results have been demonstrated over the past four years. There has been a 22.5 per cent decrease in COPD admissions to the local hospital in 2003 compared with 2000, at a time where most hospitals saw an increase (see Table 1). Other benefits have also been realised by the programme. There is now an effective and shared approach to the care of COPD between primary and secondary care. Clinical forums exist where professionals from across the health community can meet and impact on the delivery of the programme. These forums have enabled the production of shared guidelines on the processes involved in the identification and management of COPD patients, so ensuring equity of access for all patients throughout the community.

Table 1: Hospital emergency admissions for COPD within East Lincolnshire PCT - (Rate per 1000 population)

	Crude rate per 1,000 population		% reduction in rate per 1,000 population (actual numbers)
	Oct 1999–Sept 2000	Oct 2002–Sept 2003	Oct 2002–Sept 2003
Core Practices(5)	2.44	1.83	-25.1 (25)
Spread Practices(9)	2.35	1.85	-21.5 (32)
Other Practices(18)	2.26	1.76	-22.3 (59)
Total	2.32	1.80	-22.5 (116)

Between October 2002 and September 2003 there were 501 COPD admissions to United Lincolnshire Hospital Trust (ULHT) (Table 2). Owing to the implementation of East Lincolnshire Primary Care Trust's COPD programme, the trend for increasing numbers of COPD admissions declined by 22.5 per cent, unlike the rest of the country where admissions rates increased steadily – a real reduction on three years previously of 116 admissions (Informatics Lincolnshire shared services data) Between 1991 and 2000 nationally there was a 51 per cent increase in COPD admissions caused by exacerbations.

Table 2: Hospital emergency admissions for COPD within East Lincolnshire PCT (total numbers)

	Oct 1999-Sept 2000	Oct 2000-Sept 2001	Oct 2001-Sept 2002	Oct 2002-Sept 2003
Core practices (5)	107	98	81	82
Spread practices (9)	199	216	208	167
Other practices (24)	311	304	357	252
Total	617	618	646	501

At present commissioning rates, the cost of COPD admissions to ULHT is therefore £1,237,470 (= 501 × 10 × £247). Under 'payment by results', the commissioning of these admissions would cost £751,500 (= 501 × £1500).

With a real reduction of 22.5 per cent over the past three years there has been a cost saving from the East Lincolnshire PCT COPD programme of £286,520 (admissions × daily cost of acute medical bed × 10) or £174,000 using the 'payment by results' commissioning processes. Added to this must be the cost of transporting these patients to hospital, which would add a further £23,200 to both these figures. The cost of taking these patients home is not known but would obviously add further to the total amounts.

The BTS guidelines on the management of COPD state that prevention of COPD exacerbations should be a key aim of treatment in these patients (BTS 1997). The effect on quality of life for patients suffering from an acute exacerbation of COPD necessitating a hospital admission is huge. Patients measured on a quality of life questionnaire scored 'worse than death' during a hospital admission for a COPD exacerbation (O'Reilly 2003). The cost of hospital admissions for COPD exacerbations make up the largest total cost of these patients

care. Thus if exacerbations are prevented and managed at home if appropriate this is both of benefit to the patient and will be cost-effective.

Thoracic outpatient referrals

During the course of this programme, the numbers of referrals to thoracic outpatients has also decreased suggesting a reduction in referrals caused by primary care clinicians diagnosing and managing more patients with COPD within their clinical practice. In the two years from July 2002 to June 2004, 22 per cent of the total number of patients referred to secondary care (ULHT) through the county of Lincolnshire came from primary care in East Lincolnshire PCT. As 22 per cent of referrals for thoracic medicine in the quarter ended June 2004 was exactly the same percentage, this suggests that the referral rates have been constant over the two-year period (Table 3).

Table 3: Number of referrals to thoracic outpatients

	East Lincs PCT	All Lincolnshire
Number of patients in 'health community'	283,000	686,000*
Quarter end Jun 04	69 (22%)	278
Two-year figures (Jul 02–June 04)	487 (22%)	2177
Two-year expected numbers (per county rates)	1,187	
Number of referrals saved in two years	670 (cost £67,000)	
Annual cost saved	£33,500	

* Breakdown of patients across Lincolnshire: number of patients in East Lincolnshire PCT = 283,000; number of patients in South West Lincolnshire PCT = 185,000; number of patients in West Lincolnshire PCT = 218,000.

At a cost of £100 for each attendance, the annual cost reduction for this change in referral patterns would equate to £33,500.

Summary of progress to date: East Lincolnshire PCT programme

The East Lincolnshire PCT COPD programme to date has 'saved' at conservative estimations £332,696 (Table 4).

Table 4: Cost savings generated by East Lincolnshire PCT COPD programme

	'Saved' costs (£)
Hospital admission	286,520
Transport to hospital*	15,776
Hospital outpatient admissions	33m500
Total	335,796

* 116 admissions of which 68 per cent require an emergency ambulance.

In the last year-end to 2004 this reduction in numbers of COPD admissions to ULHT from East Lincolnshire PCT has been maintained. If the present support of this programme is not maintained and fully supported then it would be expected that referral patterns and numbers of hospital admissions would return to regional and national rates.

Expansion of the East Lincolnshire PCT COPD programme

As parts of the further rollout of the COPD programme, a GP with special interests in respiratory medicine, a respiratory nurse consultant and a respiratory physiotherapist have been appointed. Phase three of the programme involves developing more specialised services for patients with COPD within the community to enhance their quality of life, by optimising their treatment and shifting service from secondary care to primary care. The proposed new services are detailed within the accompanying document relating to the COPD locally enhanced service level 2.

Health economic evaluation of specialised services for patients with COPD provided in a community setting

Evidence exists nationally for various interventions that can reduce both admissions rates and length of stay of patients with COPD within hospital.

- Pulmonary rehabilitation has shown to reduce by 50 per cent hospital stay for patients with COPD and reduce GP home visits (Griffiths *et al* 2002).
- Assisted discharge with subsequent case management and integration back into primary care following an acute exacerbation can reduce re-admissions by 50 per cent (Dr Mike Ward, Kings Mill Hospital, Mansfield, personal communication).
- Up to 23 per cent of patients attending hospital with an acute exacerbation of COPD can be managed safely at home (Davies *et al* 2000).
- 42 per cent of patients admitted with COPD exacerbations can be safely discharged home early with specialist nurse support within the community (Stevenson *et al* 2001).
- Case management of older patients within the community can reduce hospital admissions by 40 per cent (Winstanley 2003).
- Hospital admissions caused by COPD exacerbations can be reduced by 22.5 per cent by developing expertise within primary care practices (East Lincolnshire PCT).
- Assisted discharge programmes for patients admitted with an acute exacerbation of COPD can reduce on average the length of stay of these patients within hospital by three days (Cotton *et al* 2000).
- Fifty per cent of patients with an acute exacerbation of COPD do not seek help from clinicians within the local health community (Seemungal *et al* 1998).

From this evidence it is postulated that the numbers of patients with COPD requiring hospital admissions for exacerbations can be reduced by 50 per cent. This would equate within East Lincolnshire PCT to a real reduction in COPD admissions of £617,400 under present commissioning processes or £375,000 under ‘payment by results’. There will a minimum reduction in hospital transport costs of £34,000. A total of 68 per cent of patients admitted to hospital with an acute exacerbation do so via an emergency ambulance (Lincolnshire Ambulance NHS Trust figures). The costs of transporting these patients home following their discharge is not known, however, assuming that 50 per cent of these patients will need ambulance transport, the costs will be high.

As patients will not need a follow-up appointment from secondary care physicians, a further £25,000 will be saved under the COPD LES 2.

Table 5: Potential cost savings by adopting COPD locally enhanced level 2

	Concurrent commissioning (£)	Payment by Results (£)
Cost of inpatient care	617,400	375,000
Cost of transport to hospital	34,000	34,000
Cost of outpatient follow-up	25,000	25,000
Total	647,400	434,500

Note: These cost savings are based on a saving of 250 admissions at a cost of £247 per acute hospital bed.

These figures are in addition to the savings that have already been created by implementation of phases one and two of East Lincolnshire PCT COPD programme. It is also postulated that

the numbers of patients referred to thoracic outpatient clinics will also decrease as more expertise is developed by primary care clinicians.

Assisted discharge programmes for patients admitted for acute COPD exacerbations have been shown to reduce length of stay in hospital by three days (Cotton *et al* 2000). This would equate to a saving of £371,241 if a similar scheme were adopted within East Lincolnshire PCT – either primary care or secondary care led. The adoption of COPD LES 2 will further allow these savings from the health community within the East Lincolnshire PCT area.

The future

East Lincolnshire PCT Public Health Department has looked at the demographics within the three localities of East Lincolnshire. Presently there are 21.4 per cent people older than 65 throughout East Lincolnshire, the national average being 15.7 per cent. Conservative estimations have shown that this figure is set to rise to 30.1 per cent of the population in East Lincolnshire by 2014. The impact of this rise in older people within the health community on the prevalence of COPD and impact on health care provision can be estimated as below.

Assuming that there will be at least 300,000 people served by East Lincolnshire PCT, 30.1 per cent of these will be over 65 years of age, that is, 90,300 patients. Approximately 1 in 10 people over the age of 45 will show demonstrable chronic airflow obstruction indicating a diagnosis of COPD. (Halpin 2003). Thus there will be a minimum of 9,300 patients over the age of 65 years with COPD. It is known that approximately 16 per cent of patients diagnosed with COPD will suffer from a hospital admission for an acute exacerbation of COPD (Morgan *et al* 1996). Thus, by 2014 there will be a minimum of 1,488 patients over the age of 65 years suffering an acute exacerbation of COPD necessitating a hospital admission. Many of these will require readmissions. In East Lincolnshire PCT area in the year end to June 2004, 22 per cent of all patients admitted with an acute exacerbation required re-admission within 1 year – the majority of whom were within four weeks of hospital inpatient discharge. There will also be an increase in the numbers of patients over 40 years of age with COPD if present trends continue. A significant proportion of these will also require hospital admissions for acute COPD. If services are not planned well in advance and invested in now, it is difficult to see how the health community within East Lincolnshire will cope with this potential explosion in numbers of patients with COPD and their consequent demands on the NHS.

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