The Efficacy of COPD Outreach in Reducing Length of Stay and Improving Quality of Life

Abstract:
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COPD exacerbations result in prolonged hospitalisation, re-admissions, reduces health-related quality of life (HRQoL) and increases mortality. Furthermore AECOPD, like other chronic disease portends to a low quality of life. The National Clinical Care programmes were created as part of this demand. COPD Outreach was introduced in twelve Irish centres with the aim of providing a Hospital at Home service for suitable patients with AECOPD. This has been shown to be safe and effective, with data from Beaumont Hospital and St James’ Hospital in Dublin having confirmed similar efficacy of COPD Outreach programmes in the Irish setting. The COPD Outreach service in Tallaght Hospital incorporating a respiratory senior physiotherapist, and respiratory nurse alongside respiratory physicians was introduced in 2012. The aim of this study was to assess the effectiveness of COPD Outreach in reducing ALOS, re-admission rate, improving health-related quality of life (HRQoL) and reducing mortality in Tallaght Hospital.

Methods
COPD Outreach care is a dynamic process under supervision of trained healthcare professionals. Patients with AECOPD are assessed and accepted onto the programme in relation to inclusion / exclusion criteria. Patients will be then followed for 2 weeks. Patient’s GP will be made aware that care in relation to the patients AECOPD remains under the clinical governance of the respiratory consultant for the period of the Outreach programme. Each patient has a customised home visit care package involving home visits and review phone calls individually clinically indicated for a two week period. The programme is extended to include an outpatient followup review within the Outreach department at six weeks. The care package includes clinical assessments, medication & inhaler education, review of oxygen therapy, smoking cessation advice, dyspnoea management & chest clearance techniques, home exercise programme, nutrition education, and referrals to the MOT in primary or secondary care as required. Hospitals records of Outreach accepted patients were compared with COPD admissions from September 2011-September 2013. The Hospital In-patient Enquiry Scheme (HIES) provided ALOS,total bed days (TBD),re-admission rates and mortality data. HRQoL information was collected on patients enrolled into the Outreach programme at the beginning and 6 weeks after enrolment, using the COPD Assessment Test (CAT).

Results
From September 2011 to September 2012 Tallaght Hospital had 584 acute admissions with AECOPD. The ALOS was 8.5 days. Eighteen patients were excluded due to be the 90 days prior to the Outreach programme. Of these 404 cases (68.9%), the COPD Outreach service reviewed 399 hospital admissions for potential inclusion on the Outreach programme. Of these, 161 patients were accepted onto the Outreach programme programme. Of the 237 patients were deemed unsuitable for the Outreach programme. Of the 161 cases enrolled, 111 were nonsmokers which includes 23 female patients. The average time for patients to be enrolled onto the Outreach programme after a hospital admission was 1.4 days. ALOS of these 161 cases was 2.47 days.

The re-admission rate within 90 days was 36.3%. The ALOS of initial cases of AECOPD enrolled to the Outreach programme was 4 days. The ALOS of re-admissions within 90 days alone was 6.8 days (Range=1– 39 days). TBD of all initial admissions discharged using the Outreach service was 1290 days, TBD of Outreach assisted discharges after subtracting re-admissions within 90 days TBD (614 days) was 676 bed days. The characteristics of the 161 patients are detailed in Table 1. A total of Half of the 161 cases occurred within 90 days of their initial admission. One patient passed away at home. One death happened during convalescence. 6 died in hospital. HRQoL improved significantly for all patients accepted onto the Outreach programme. CAT scores improved from a mean of 19.3 (-9.45) at enrolment to a mean of 13.5 (-7.61) after 6 weeks of Outreach care. The COPD Assessment Test (total points=40) is a validated assessment of quality of life. Scoring more than 30 can indicate the disease has a very high impact on a health status. A difference equal or more than 2 point is clinically significant.

Discussion
This study proved COPD Outreach service reduces ALOS for selected patients with an exacerbation of COPD. Patients included on the Outreach programme had an ALOS of 2.47 days in contrast to the ALOS of 8.5 days for total AECOPD. COPD Outreach also contributed to improved HRQoL scores after the 6 weeks period; demonstrated by a mean increase of 5.8 points using the CAT. It did not reduce rate of re-admission of patients within 90 days of their initial presentation with an exacerbation of COPD. Furthermore there was no reduction in mortality with the Outreach service. Although, mortality was 4% among Outreach patients and 2.5% for overall AECOPD in 2012-2013. COPD Outreach reduced ALOS and improved HRQoL for selected patients with AECOPD. It did not reduce re-admissions or mortality.

The National Clinical Care Programme for COPD was launched in 2011 with one of its key objectives being the implementation of the COPD programmes around Ireland. Our data concurred with evidence from Beaumont Hospital and St James Hospital that COPD Outreach reduced ALOS. International data has demonstrated similar findings. In the year COPD Outreach was operational, the overall re-admission rate for all AECOPD in Tallaght dropped in contrast to the year prior to the programme (p=0.469). Interestingly the re-admission rate of only selected patients onto the Outreach programme was higher in contrast to both years with and without an Outreach service. This supports recent data which shows a statistically significant increase in hospitalisations in a subgroup analysis of patients receiving Outreach support. However there was an overall cost savings to the hospital after including the cost of re-admissions.
as demonstrated in both total bed days saved and reductions in ALOS. We have noticed patients being labelled AECOPD for unrelated diagnosis particularly acopia which might explain why re-admissions are more prolonged after recent discharge with COPD Outreach. Another hypothesis is the possibility that patient education and self-monitoring may lead to overconfidence in symptom management and delay in necessary urgent initial therapy. This then results in a treatment delay culminating in a need for a longer hospital admission. A suggestion to improve this is that Outreach patients are provided with more efficient self-monitoring information, emergency back up scripts, and clear contact information and advice to seek urgent medical attention in the event of clinical deterioration.

Depression is frequently reported in chronic diseases. In COPD it is noted as part of a vicious cycle involving poor health status, isolation, and a sedentary lifestyle. We already know AECOPD reduces HRQOL. Despite evidence of higher rate of re-admissions among COPD Outreach patients; it is reassuring that our dedicated COPD Outreach discharge does improve HRQOL scores. This concurs with the most recent Cochrane systematic review of previous randomised controlled trials which noted a significant increase in improvement of HRQOL with Outreach care compared to regular monitoring. Disease education and feedback has been identified to significantly improve chronic disease management. Our Outreach also emphasises a home exercise programme which has been shown to be as effective as hospital based pulmonary rehabilitation. AECOPD are known to be associated with significant mortality and increases the risk of further mortality. A non significant reduction in mortality was noted after 12 months of Outreach care by the Cochrane airways group. Unfortunately we could not demonstrate if an Outreach assisted discharge help reduce mortality among our patients with an AECOPD.

Mortality rate among the COPD Outreach patients were higher than the overall COPD admissions within the same year. Moreover we hypothesise that the apparent increased mortality data with Outreach may have been skewed by the fact mortalities after discharge among the overall cohort of AECOPD are not notified to the hospitals as they would have been, if they were under the supervision of an Outreach Respiratory service. Berekens in the community where the GP would have certified the death individually without feedback to the hospital may have occurred. Currently no system is in place to record mortalities after discharge from hospital even in the case of a coroner inquiry into the death. This study is limited by the fact Outreach is only available to non-acidic exacerbators. The ALOS of these patients could be naturally shorter even without Outreach assistance. An over-reliance on HPE data to calculate overall hospital admissions with COPD may show a discrepancy as patients with breathlessness admitted under non-respiratory teams may be coded as a primary diagnosis of COPD which may be inaccurate. Commonly community acquired pneumonias and uncomplicated heart failure in known COPD patients can be misconstrued as an AECOPD. This study could be strengthened by analysing totality of presentations with AECOPD including presentations to the Emergency Department/AMAU without admission. The effect of re-admissions by these patients who are fit for discharge by the ED/AMAU with antibiotics and steroid therapy who do not require Outreach input. A randomised study into comparing CAT scores at discharge and 6 weeks after discharge for all AECOPD would further validate the benefits seen with an Outreach service.

The future requires research into broadening the inclusion criteria for COPD Outreach patients. This will allow a greater impact over overall admissions with AECOPD. HPE systems recording hospital admissions should also be broadened by collating data for ED/AMAU reviews to get a more complete picture of COPD presentations. Studies into subsets of COPD patients with higher re-admission rates are further necessary, and COPD Outreach service should be equipped with providing controlled oxygen therapy, portable trans cutaneous carbon dioxide and oxygen monitoring.

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Acknowledgments

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