Proactive identification of Uncontrolled Severe Asthma Patients within Humber and North Yorkshire ICS to Address Inequalities in access to Asthma Biologics: The Pro-HNY-Bio Project

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Background and Aims

According to an Asthma UK report: Severe asthma – Unmet need and global challenge (2017)[1] , around 200,000-250,000 people in the UK have severe asthma, which may be under recognised in primary care. Patients could benefit from a more systematic assessment in primary care and possible specialist referral.[2] In well selected severe asthma patients newer biological therapies decrease asthma exacerbations by over half and may have a "life-changing" effect in some. Potentially many severe asthma patients, who may benefit from treatment with a biologic, are not referred into specialist care for assessment; it is estimated that over three quarters of asthma patients eligible for these drugs haven't been assessed for the same.[1] There is inequity in access to specialist services nationally and within Humber and North Yorkshire (HNY).

The Pro-HNY-Bio Project aimed to improve access to biologics across HNY through community and primary care engagement, supported proactive patient identification and therapy optimisation in primary care. The objectives of the project were: engagement with HNY communities and primary care providers to raise awareness and provide education about severe asthma and biologics ; out-reach into primary care to run searches to identify severe asthma patients ; review of severe asthma patients in primary care with optimisation of asthma care ; and facilitated referral to the severe asthma service for biologic initiation.

Methods

1. Engagement and Education: An education and public awareness campaign was undertaken with HNY communities and primary care providers to raise awareness and provide education about severe asthma and biologics.
2. Patient identification, review and facilitated referral of potentially biologic eligible severe asthma patients within deprived regions of HNY. This involved 3-phases: i) out-reach into primary care to run searches to identify patients; ii) review in primary care with optimisation of asthma care; and iii) facilitated referral to the severe asthma service.
3. Evaluation: i) data were collected relating to education and engagement activities; ii) biologics prescribing across HNY was quantified before and after project delivery; and iii) targeted patient identification, review and facilitated referral were characterised including patient demographics and asthma features. Data are presented descriptively.

Results

Education and engagement: 11 activities were undertaken, reaching 431 health care professionals with 435 minutes of education delivered. Public engagement was achieved through a regional publication and radio interview. The number of patients prescribed biologics at the start of the project was 197, increasing to 337 at the end.

Of 253 patients identified as potentially biologic eligible, 80 have been invited for clinical review. Of 47 reviewed so far, 7 have been referred for biologic evaluation (Tables 1,2). Many of these patients were from the most deprived IMD decile (Figure).

Those living in regions with the highest levels of deprivation are the most likely to be receiving biological therapies for severe asthma within Humber and North Yorkshire (Panel 1). However, the demographic of severe asthma patients varies significantly across the regions (places) that make up Humber and North Yorkshire (Panel 2.), emphasising the importance of projects like Pro-HNY-Bio to support identification and facilitate access to biologics for those living within pockets of deprivation within otherwise affluent communities, such as the coastal regions targeted by Pro-HNY-Bio.

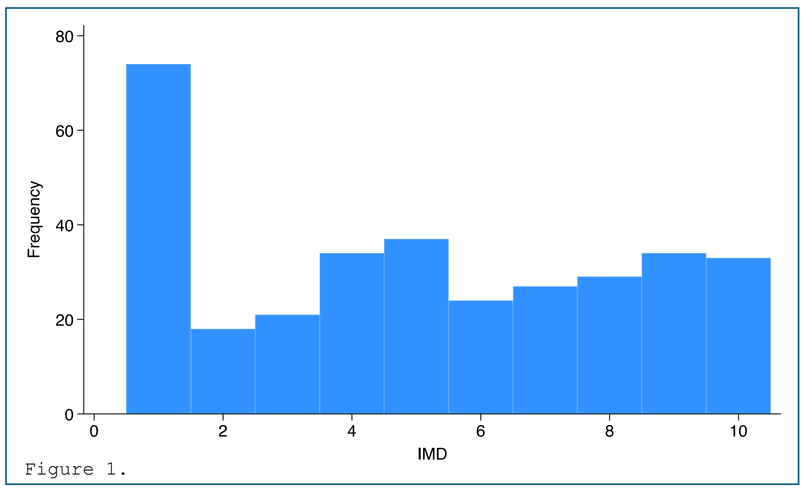

Figure 1.

***Figure 1**. Histogram demonstrating the distribution of severe asthma patients receiving biological therapies based on index of multiple deprivation (IMD).*

Characteristic	Review 1	Review 2	P-value
ACQ-6	2.2 [0.2]	1.7 [0.2]	<0.01
FeNO	51.3 [16.4]	47.3 [17.2]	0.6

***Table 2.** ACQ-6 and FeNO values for those attending initial and second clinical review with the Pro-HNY-Bio Project specialist asthma nurse. Data are presented as mean [SD] and statistical significance assessed using a two-way, paired t-test.*

***Figure 2.** Histograms demonstrating the distribution of severe asthma patients receiving biological therapies within each region (place) across Humber and North Yorkshire. Panel a) represents Hull, b) East Riding of Yorkshire, c) North Lincolnshire, d) North East Lincolnshire, e) Vale of York, and f) North Yorkshire.*

Note: Y-axis scales are optimised to demonstrate the distribution within each region/panel and not to enable comparison of number of patients by IMD group between regions.

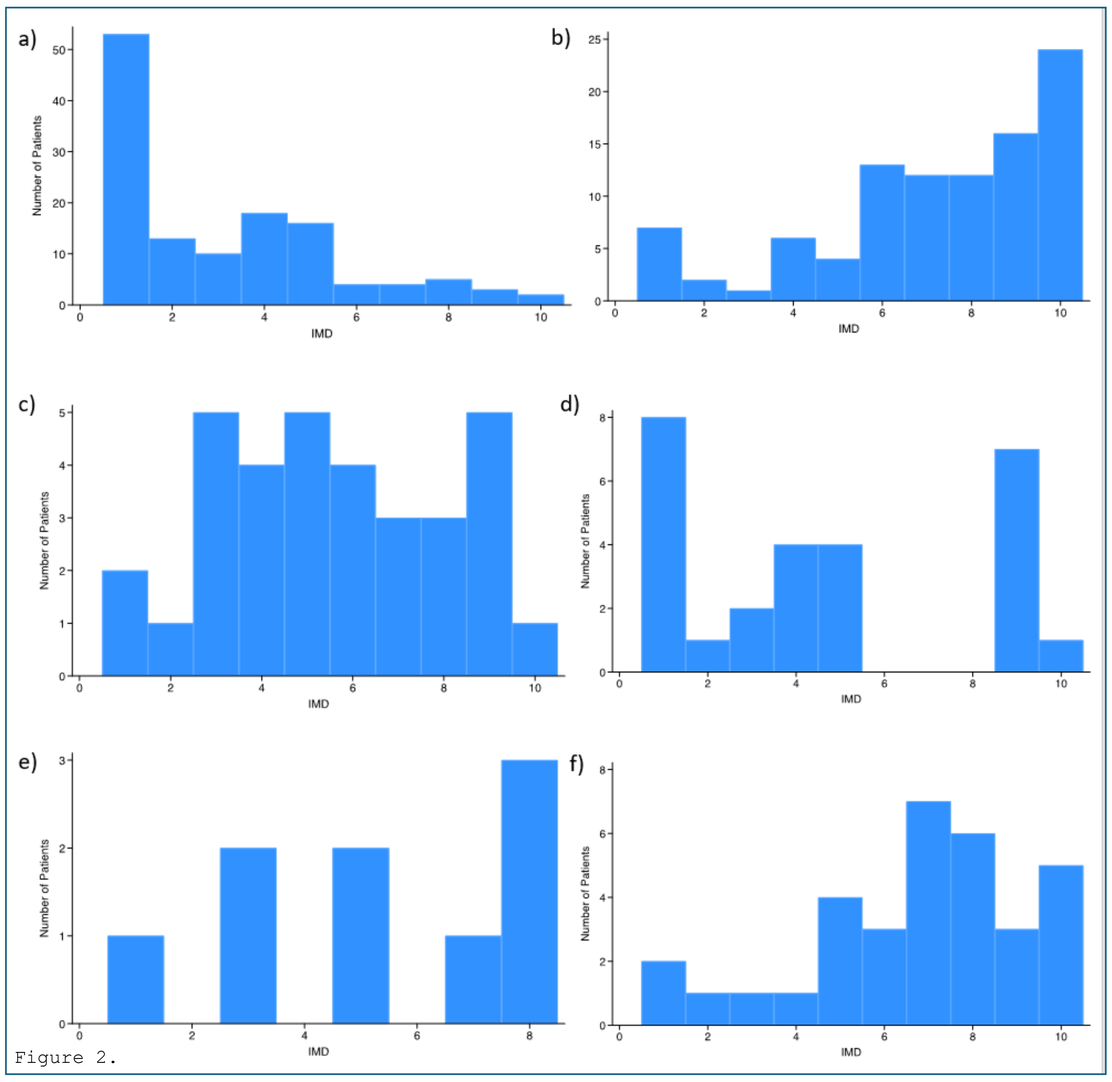

Figure 2.

Characteristic	All participants	Referred for SAC Review
Number – n [%]	47 [100]	7 [15]
Age	53.2 [17.1]	45.1 [23.1]
BMI	32.6 [7.3]	32.1 [8.9]
Gender – n [%]		
- Male	10 [21]	1 [14]
- Female	37 [79]	7 [86]
IMD – n [%]		
- 1	15 [32]	1 [14]
- 2	7 [15]	2 [29]
- 3	5 [11]	1 [14]
- 4	4 [9]	2 [29]
- 5	6 [13]	0 [0]
- 6	2 [4]	0 [0]
- 7	4 [9]	0 [0]
- 8	4 [9]	1 [14]
- 9	0 [0]	0 [0]
- 10	0 [0]	0 [0]
Highest Eos	0.42 [0.39]	0.44 [0.19]
Number SABA (past 12-months)	8.2 [3.6]	7.9 [3.0]
Exacerbations (past 12-months)		
- OCS Courses	3.4 [1.7]	4.9 [3.0]
- ED Attendances	0.3 [0.7]	0.3 [0.5]
- Hospital Admissions	0.1[0.4]	0.1 [0.4]
ACQ-6	2.0 [0.8]	2.5 [1.0]
FEV-1 (% predicted)	79 [19]	90 [23]
FeNO (ppb)	29 [32]	61 [57]

***Table 1.** Baseline characteristics of asthma patients attending initial review with Pro-HNY-Bio specialist nurse. Data are presented as mean [SD] unless stated otherwise. Categorical data are presented as n [%] where proportions are calculated within columns. ACQ: asthma control questionnaire; FeNO exhaled nitric oxide levels; and SAC: severe asthma centre*

Discussion

The HNY region has seen a significant increase in the number of patients prescribed biological therapies for asthma. Those identified for review as part of the project achieved improved asthma control during follow-up but the number of reviewed patients referred for biologics initiation as a direct result of case finding was relatively small. The increase in biologic prescribing is therefore likely due to improvement in clinical pathways and the impact of case-finding initiatives in primary care needs further evaluation. A targeted approach can improve asthma outcomes and increase access from deprived areas to specialist care.

Our results suggest that it is feasible to identify patients with severe asthma in primary care by means of a remote search of electronic patient records. Criteria used to identify patients in this project were based on being eligible for a trial of treatment with biological therapies, rather than meeting definition of severe asthma. Following optimisation of treatment by a specialist nurse, less than 10% of patients reviewed were referred to the severe asthma service for further evaluation. This suggests that the vast majority of asthma patients who otherwise meet criteria for biological therapies can be managed in primary care with appropriate review and treatment optimisation, potentially improving patient outcomes whilst optimising health-care resource use at the same time.

Although the number progressing to biologics was not large, and much lower than predicted, this project has highlighted several aspects which may help in delivery of asthma care and inform pathways between primary and secondary care. As most patients continued to be managed in primary care, the resource-utilisation efficiency for the NHS is at several levels; improved patient outcomes, less utilisation of primary care resource, decrease in referral to secondary care, better quality referral as well as avoidance of inappropriate referrals.

The effect of engagement and education is difficult to objectively quantify; however, this has the potential for significant benefits. Ongoing upskilling of primary care, both from the perspectives of optimising standard asthma care as well as knowledge regarding when to refer patients for assessment towards biological treatments, is very important in the longer-term.

References: 1. *Asthma UK : Living in Limbo: the Scale of unmet need in difficult and severe asthma living-in-limbo---the-scale-of-unmet-need-in-difficult-and-severe-asthma.pdf* 2. Ryan D, et al. Potential Severe Asthma Hidden in UK Primary Care. J Allergy Clin Immunol Pract . 2021 Apr;9(4):1612-1623.e9.