A prevention focussed approach to improving chronic obstructive pulmonary disease (COPD) outcomes (PICO) across six general practices in Healthier South Wirral (HSW) PCN England

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Aims

This project was set out to support the correct diagnosis of Chronic Obstructive Pulmonary Disease (COPD) in general practice by evaluating the delivery of quality assured spirometry.
Patients' medical records across a primary care network were reviewed and categorized into groups:

1. **Cohort A:** No spirometry performed to confirm diagnosis however, these same patients were being prescribed all types of COPD medication
2. **Cohort B:** Misdiagnosis of COPD by confirmation of a new spirometry test and face to face review
3. **Cohort C:** Uncontrolled patients with COPD classed as being prescribed two or more courses of oral prednisolone over a twelve-month period.

Additionally, we aimed to:

- Evaluate the delivery of Quality Assured Spirometry across HSW PCN
- Confirm Early and Accurate COPD Diagnosis
- Identify and risk stratify patients who are at risk of a COPD Exacerbation with Cardiopulmonary risk factors.
- Embed a preventative strategy to optimize management both pharmacologically and non-pharmacologically
- Provide Mentorship to upskill HSW PCN Clinicians

Methods

Healthier South Wirral (HSW) Primary Care Network (PCN) comprises of 6 GP practices and a total patient population of 53,180, of which 1109 were on the COPD register. 739 of these patients with COPD were reviewed as part of this quality improvement project and were equally divided between the 6 GP practices (123 each).
Aiming to know if our input would show change in an improvement (measure of success), we therefore set in place our aims:

1) Reduction in spirometry wait times over 12 months
2) Reduction in COPD exacerbations and hospitalization over 12 months
3) Improvement in QOL via CAT scores
4) Increase in referrals to PR and SC
5) Reduction in Cardiovascular outcomes
6) Pathway/policy redesign which embeds Cardiopulmonary risk and standardizes COPD care

A data search was conducted on all patients coded COPD categorising them into each cohort. All patients in cohort A and B received new quality assured spirometry with reversibility. This followed with a review of the results by a consultant chest physician to support their current or a 'now' new diagnosis. A monthly MDT was set up and run with the Respiratory Consultant and Respiratory Nurse Consultant (RNC) for the first six months of the project to discuss a new plan for each patient. However, due to the winter demands on the hospital we had to resort to correspondence from the consultant to the RNC with his suggestions. The consultant would write to the RNC within ten days of the patient having completed their tests.

All patients whose spirometry results were normal and showed no indication of COPD then received a nitric oxide breath test (FeNO) in primary care to consider the diagnosis of asthma. FeNO was the preferred test across HSW in supporting the diagnosis of asthma rather than blood eosinophil.
On diagnostic confirmation from discussion with the Chest Consultant supporting the project, the patient was then reviewed either F2F by the RNC or guiding the practice nurse at the surgery. Due to so many (unexpected) patients needing reviews the RNC was unable to review every patient which had been the original plan. This was due to so much inaccuracy in previous test results, indicating an incorrect COPD diagnosis.

Each patient's spirometry results were explained in more depth to the patient over a 45-minute F2F consultation. Allowing us at this touchpoint of care to embed a risk strategy to improve diagnosis, optimize management both pharmacologically and non-pharmacologically was implemented with a cardiopulmonary risk factor template. This was only completed at the patient's review appointment post all testing knowing the patient's diagnosis was now accurate and clear.
In England general practice quality and outcomes framework (QoF) must be completed annually for GPs to be paid. To enable us to achieve standardised care cross the PCN the same template was completed on each patient, asking the same questions. By doing this it was hoped moving forward we would upskill HCPs.

Every patient was offered Pulmonary Rehab (PR). However, it was often declined. This had been noticed on virtual reviews – text messages asking patients to attend PR, the response box is only yes or no. It does not give an option to explain why they didn't wish to attend. Due to our consultations being F2F we discovered why patients didn't wish to attend. As expected, many patients didn't have transport due to the highly deprived area they lived in – they had to rely on local bus service's which they felt were inadequate to make ease of getting to the appointment. However, two miles across the PCN where it was more affluent, we discovered a local gym was offering 'exercise classes' for breathless patients which some patients found more 'fun' as many met up afterwards for a coffee. Those patients felt that was their version of PR and it 'cheered' them up much more – generally boosted their mental health. We would never have discovered such a variety in responses had we not completed F2F reviews.

More recently F2F reviews are not being offered across Cheshire & Mersey but the practice send a text messaging to the patient with COPD test (CAT) and then a further text message offering health advice when the results have been reviewed. A patient may not be seen F2F at all.
A clear lack of consistency in HCPs inputting important data when they reviewed a patient had already been noted. For this project we all used the same templates to enable accuracy. However, it became apparent as we collated the data although the same template was used across all six sites, and the same questions asked – not all all-templates plates were completed accurately. It became clear many HCPs did not encourage PR or smoking cessation. However, management plans were highlighted to be the worst.

Management plans for COPD were regularly ticked as completed. When the patient was asked about their plan, we realised an understanding of management plan was seen differently by many HCPs i.e.

- Are you using your inhaler twice a day? – document yes: management plan on the EMIS template ticked
- Inhaler technique checked (not observed only asked if any issues)? – documented completed as management plan given
- Do you understand how to use your rescue pack? Again, management plan was ticked but no guidance was issued to the patient on how and when to take their rescue pack. No guidance to send a sample of sputum to the lab to be sure antibiotics were required.

Rarely was an actual evidenced based management plan given to the patient. However, on first review of this data you would assume this PCN was offering a management plan to many patients.

Table 1 : Patients with COPD Cohorts Identified

Pt Cohort	Pt Numbers	Characteristics
A	136	No spirometry performed to confirm diagnosis however, these same patients were being prescribed all types of COPD medication
B	400	Misdiagnosis of COPD by confirmation of a new spirometry test and face to face review
C	203	Uncontrolled patients with COPD classed as being prescribed two or more courses of oral prednisolone over a twelve-month period.

Results

DIAGNOSIS:

- 60% of patients received Quality Assured Spirometry.
- Of the 739 patients with COPD reviewed during this Quality Improvement Project, 667 patients were confirmed COPD with no additional comorbidities,
- 72 patients **(Fig 1)** were confirmed as differential or non-COPD diagnosis which was broken down into the following categories **(Fig 2):**
  - 24 Non-COPD (spirometry normal, asymptomatic but on COPD medication)
  - 11 primary cardiac disease confirmed
  - 10 Asthma patients confirmed by FENO
  - 8 Bronchiectasis patients confirmed by CT scan
  - 19 patients with COPD also had additional respiratory comorbidities

Fig 1 : COPD Diagnosis

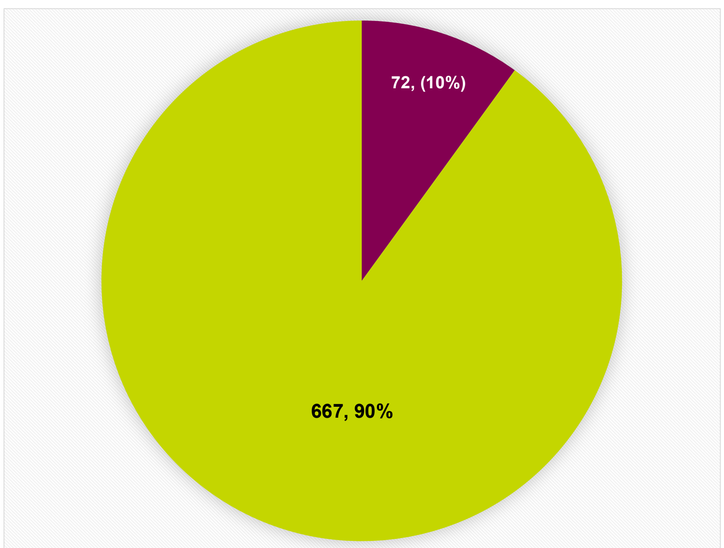
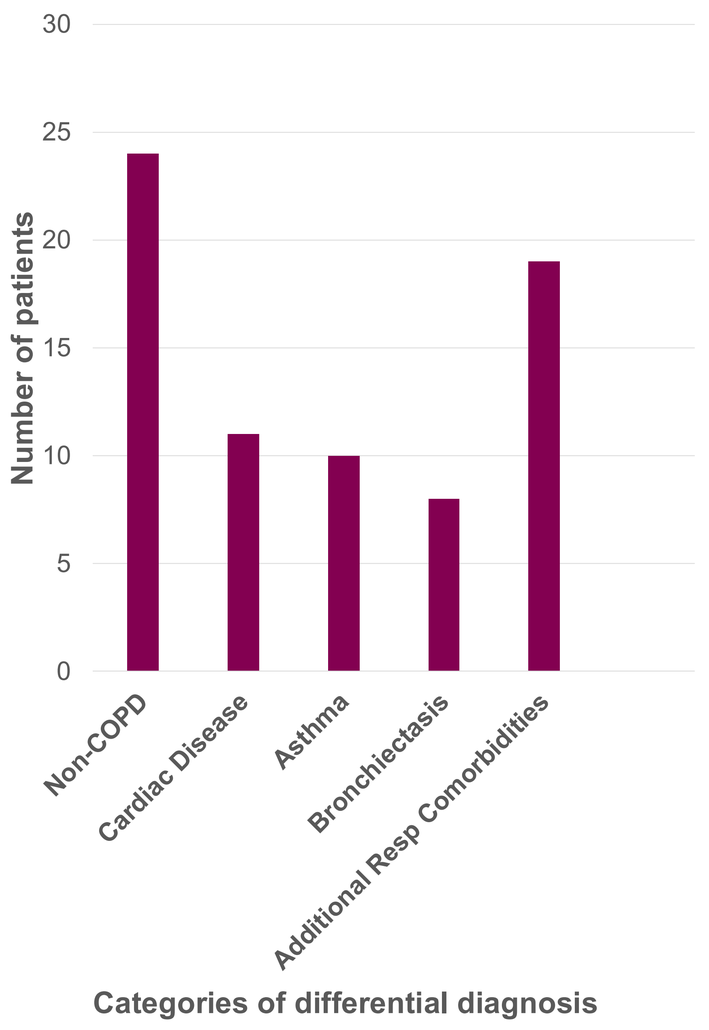


Fig 2 : Categories of Differential Diagnosis



MEDICINES OPTIMISATION:

- 50% of patients with COPD had an improved CAT score
- 25% had management plans incorrectly completed.
- 100% of patients received a COPD review and 100% were medically optimized.
- 32% of the population had cardiopulmonary risk factors.
- 33% of patients were referred to pulmonary rehabilitation
- 20% to smoking cessation.

Fig 3 : Breakdown of Results

Objective	Cohort C Intervention 1	Cohort A Intervention 1	Cohort B Intervention 1	Total (of Intervention 2)	Project Total
Quality Assured Spirometry					
% Tests Done	48%	62%	28%	40%	60%
Pharmacological Interventions					
% Medically Optimised	100%	30%	44%	100%	100%
% with CP Risk	58%	3%	10%	32%	32%
Non-pharmacological Interventions					
% COPD review	100%	100%	100%	83%	100%
% PR Referral	10%	15%	25%	16%	33%
% SC Referral	8%	0%	10%	62%	20%
% COPD Plans	100%	100%	100%	100%	100%
% Inhaler Technique Review	100%	100%	100%	83%	100%
Other Measures					
% Improvement in CAT score	50%				
Education	3 Respiratory Place Level Forum Meetings Held to Date				

Conclusions

- Systematic improvement approaches can help reduce variation, improve quality, reduce admissions, and contain costs without significant impact on resources.
- Detailed practice-level information can demonstrate significant scope to improve the quality of diagnosis and reliability of appropriate treatment.
- Consistent and accurate coding with improved completion of COPD template in primary care is essential for proactive management of patients.
- Accurate diagnosis and regular review to optimise medicines use can improve patient outcomes.
- Further work is needed to demonstrate how teams can best use existing resources to more accurately diagnose and deliver proactive management of COPD.

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Abbreviations

COPD – chronic obstructive pulmonary disease
HSW – Healthier South Wirral
PCN – Primary Care Network
QOL – Quality of Life
CP - Cardiopulmonary
CAT – COPD Assessment Test
PR – Pulmonary Rehabilitation
SC – Smoking Cessation
MDT – Multi Disciplinary Team
RNC – Respiratory Nurse Consultant
FeNO - Fractional Exhaled Nitric Oxide
F2F – face to face
QoF – Quality Outcomes Framework
GP – General Practitioner
HCP – Health care Professional

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