Quality Improvement Tool Instruction Guide GRASP-COPD

The GRASP-COPD quality improvement tool has been developed by PRIMIS and delivered in partnership with NHS England.

Prepared by PRIMIS

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Contents

Introduction

The Guidance on Risk Assessment in Stroke Prevention for Chronic Obstructive Pulmonary Disease (GRASP-COPD) tool forms part of the GRASP suite of quality improvement tools, developed by PRIMIS in partnership with NHS England.

GRASP-AF, GRASP-COPD (Chronic Obstructive Pulmonary Disease) and GRASP-HF (Heart Failure) help practices achieve a systematic approach to the identification, diagnosis and optimal management of patients with these life-long conditions. Although they differ in aetiology and clinical presentation, they have certain similarities: all are under-diagnosed, their prevalence is forecast to increase as the population ages and evidence suggests that the use of effective interventions to delay the progression of these conditions and improve quality of life is currently sub-optimal.

The GRASP suite supports practices to:

- maintain complete and accurate disease registers

- compare patient care against national standards and guidelines

- maximise achievement of Quality and Outcomes Framework (QOF) points

- provide evidence of audit for inclusion in GP revalidation portfolios and CQC assessment

- work towards the goals outlined in domains one (Preventing people from dying prematurely) and two (Enhancing quality of life for people with long-term conditions) of the NHS Outcomes Framework

Chronic Obstructive Pulmonary Disease

It is estimated that there are three million patients in the UK who have Chronic Obstructive Pulmonary Disease (COPD), of whom an estimated two million are yet to be diagnosed[1]. COPD causes significant morbidity and is one of the largest causes of mortality in the developed world with an estimated 30,000 deaths a year in England alone[2, 3]. COPD care costs the NHS an estimated £1 billion a year[4]. There is a general misconception that when patients are diagnosed with COPD the damage is already done and there is very little that can be done to affect mortality or disease progression. This misconception has lead to poor quality of care and the need to drive improvement. Every aspect of COPD care has significant benefit to improving COPD morbidity and in fact certain interventions can reduce decline in lung function and improve survival.

There has been a national drive to improve case finding which is discussed in detail in the national outcomes strategy for COPD and asthma[3].

> **"One in eight people over 35 has COPD that has not been properly identified or diagnosed, and over 15% are only diagnosed when they present to hospital as a emergency"**
>
> An Outcomes Strategy for COPD and Asthma: NHS Companion Document (2012)

Finding COPD patients early has benefits with evidence showing that early detection, management and treatment of COPD may help improve symptoms control, disease progression and outcomes in COPD[5]. Primary care is an ideal environment in which to case find. There are various methods but commonly a targeted approach is best when screening patients with COPD risk factors and symptoms e.g. smokers over 35 years of age with frequent chest infections in the last 12 months. Other methods such as questionnaires are available to select the high risk patients[5]. Ideally case finding should be done with spirometry to look for obstructive airways disease.

From a commissioning perspective, there are benefits in terms of cost reduction for the effective management of patients with COPD.

> **"COPD is the second most common cause of emergency admissions to hospital and one of the most costly inpatient conditions to be treated by the NHS. There is a four-fold variation in non-elective admissions across England, and readmission rates vary by up to five times in different parts of the country."**
>
> An Outcomes Strategy for COPD and Asthma: NHS Companion Document (2012)

Data quality and the use of quality improvement tools

It must be emphasised that the data and information provided by this tool **should not** replace clinical decision making but instead should be used to help inform that decision.

No risk scoring system or reporting tool is considered perfectly accurate; they are entirely dependent upon certain factors being present and coded within the patient's electronic record. It is always a possibility that relevant items have been coded or alternative Read codes have been used that could be considered inaccurate or too generic.

As a result patients must be reviewed to confirm the accuracy of recorded information before management or treatment is decided upon.

Aim of the GRASP COPD quality improvement tool

The aim of the GRASP-COPD tool is twofold; to report upon the level of care being offered to patients with COPD and to assist with case finding activity. It will help you to identify areas where you can improve the quality of care provided and improve not only survival of your patients but their quality of life. It will also help you to identify patients who may have COPD but have not yet been diagnosed or would benefit from being screened.

The audit criteria are based upon the guidance within NICE Clinical Guideline 101 – Management of Chronic Obstructive Pulmonary Disease in Adults in Primary and Secondary Care[6] and the NICE Quality Statement 10 (QS10) for COPD in adults.

GRASP-COPD helps practices by:

- Generating a list of patients who may have a missing diagnosis of COPD or who may be at risk of developing COPD in the future.

- Allowing practices to achieve a more accurate prevalence rate for COPD within their practice population

- Facilitating clinical audit against national standards for all patients with a coded diagnosis of COPD including the following key aspects of care:

  - COPD management checks including yearly review rates, number with a self management plan, pulmonary rehabilitation attendance, inhaler technique assessments and body mass index (BMI) recording rates
  - Medical Research Council (MRC) dyspnoea score
  - COPD severity classification (vs latest FEV_1 value)
  - Details of treatment classified by disease severity
  - Number of smokers and their smoking cessation activity
  - Number using oxygen at home and pulse oximetry recording
  - Flu and pneumococcal vaccination status

- Summarising te number of COPD patients being treated according to NICE guidelines (specific measurable aspects)

- Providing the facility to compare data with other practices both locally and nationally and the option to share aggregated data with their CCG

- Contributing to the delivery of the NHS Outcomes Framework and the Quality and Outcomes Framework (QOF)

Clinical audit notes and GP revalidation

This quality improvement tool has been designed to support GP revalidation. GPs can use the various displays within the CHART software to review clinical data at both patient and practice level, enabling them to maintain an overall picture of how they're managing patients at a population level but at the same time, look in detail at the care of individual patients:

- This is a retrospective clinical audit - looking back at clinical practice that has already taken place

- When conducting clinical audit for GP revalidation, GPs might choose to audit just their own clinical practice. Note that the GRASP-COPD tool will report on all patients with a COPD diagnosis or factors suggesting possible COPD. Be aware therefore that data on the activity of others will also be gathered

- Involve fellow GPs in the clinical audit project. Several GPs who work together as a team can undertake a common audit. This is acceptable for the purpose of GP revalidation, as long as each GP can demonstrate that they have contributed fully to the clinical audit activity. Alternatively, seek their permission

- A clinical audit on the care of patients with COPD (or possible COPD for casefinder searches) matches the following criteria:

  - it is of concern for patients and has the potential to improve patient outcomes
  - it is important and is of interest to you and your colleagues
  - it is of clinical concern
  - it is financially important
  - it is of local or national importance
  - it is practically viable
  - there is new research evidence available on the topic
  - it is supported by good research

Running the GRASP COPD quality improvement tool

Before running the searches you must ensure that CHART is installed and you are familiar with how to use the software. Detailed instructions on CHART installation and using the software can be found on the PRIMIS website: http://www.nottingham.ac.uk/primis/tools/chart/chart.aspx

There are two MIQUEST query sets contained within the GRASP-COPD tool: one set for the casefinder and another for the management of patients with known COPD.

Within the CHART software, practices can switch between the casefinder and the GRASP-COPD report by using the 'Select Response Workbook function as shown right.
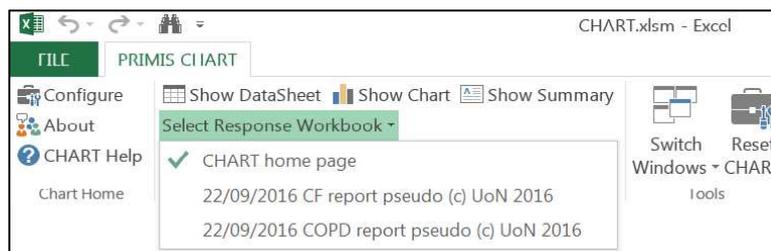
Both sets will only search on patients who are currently registered at the practice. It is recommended that the searches are run frequently (e.g. quarterly or six monthly) to monitor standards of care.

Many aspects of the audit are based upon a 12 month search period (such as annual review, BMI recording etc). Flu vaccination results may appear low depending upon the date the searches are run. The date ranges have been set up to extract data from the last flu vaccination season (1st September – 31st August). As a result, if the searches are run at the beginning of the season (September), few patients will be picked up as few will have had their annual vaccination. The searches should be re-run towards the end of the vaccination campaign to ensure that all patients with COPD have been vaccinated (or a contraindication recorded).

CHART Online

CHART Online is a secure web tool that helps practices improve performance through comparative data analysis. By using CHART Online, practices can explore and compare the quality of their own data with anonymised data from other practices, locally or nationally, through interactive graphs. This provides a powerful tool for reducing variation across localities and may be of interest to local commissioning groups to facilitate the planning of care pathways.

Pseudonymised patient level data on patients with known COPD can be uploaded securely from the GRASP-COPD tool.

To do this, pseudonymised results must be loaded into CHART so that the upload button appears on the CHART toolbar. There is an inbuilt security function that prevents patient identifiable data being uploaded to CHART Online. Only aggregate data compiled from the pseudonymised responses can be transmitted.

Please note that data from the COPD casefinder cannot be uploaded.

GRASP COPD Casefinder

It is strongly recommended that practices use the casefinder before going on to examine the management of patients with known COPD. Using the casefinder as a starting point will ensure that people with COPD are diagnosed earlier, receive appropriate treatment and that the practice COPD register and practice prevalence rate are as accurate as possible.

The GRASP-COPD casefinder helps practices to answer the following questions:
- Do we have any patients with COPD who do not have the diagnosis coded in their electronic record?
- Are there any patients who would benefit from review for possible inclusion in the register and relevant treatment?
- How accurate is the practice prevalence rate for COPD?
- How many patients are at risk of developing COPD in our practice?

The casefinder summary sheet is designed to give an indication of patients who may benefit from having their records reviewed.

Casefinder output
The GRASP-COPD casefinder provides the following views in CHART:
1. Summary sheet (classic view)
2. Datasheet
3. Pre-set graphs (three in total)

Viewing your results

View 1 – CHART summary sheet (classic view)

CHART summary sheets provide a snapshot of all the relevant data recorded by the practice. For the GRASP - COPD casefinder there is just one summary sheet view available (see snapshot below):

PRIMIS | **CHART**
care and health analysis in real time | **The University of Nottingham**
UNITED KINGDOM · CHINA · MALAYSIA

GRASP - COPD Casefinder   © University of Nottingham 2016. All rights reserved

Practice Population	25803

Suggested Patients for Review	Number
Patients with a COPD monitoring code ever	166
Patients prescribed LAMA in L12M	44
Patients prescribed carbocisteine in L12M	34
Patients prescribed inhaled steroids in L12M but no asthma Dx	75
Patients with >9 antibiotics prescribed in L3Y but no asthma Dx	36

Summary Information

Smoking Status	Number
Current smokers	604
Ex-smokers	1688

Prescribed Medication	Number
Patients prescribed LAMA in L12M	44
Patients prescribed LABA in L12M	21
Patients prescribed SAMA in L12M	15
Patients prescribed SABA in L12M	971
Patients prescribed inhaled steroids in L12M	795
Patients prescribed combined ICS/LABA in L12M	427
Patients prescribed carbocisteine in L12M	34

Evidence of Frequent Chest Problems	Number
> 9 antibiotic prescriptions in L3Y	83
>2 oral steroid prescriptions in L3Y	218
>2 respiratory exacerbations in L3Y	103

There is no single diagnostic test for COPD. Diagnosis relies on a combination of history, physical examination and confirmation of airflow obstruction using spirometry. A diagnosis of COPD should be considered in patients over the age of 35 who have a risk factor (generally smoking) and who present with exertional breathlessness, chronic cough, regular sputum production, frequent winter 'bronchitis' or wheeze.

Only patients over the age of 35, without an existing diagnosis of COPD, who are recorded as being a current smoker or ex-smoker (based on latest entry) or who have been exposed to an external agent that may lead to COPD are included in the results of the casefinder.

Suggested Patients for Review

Practice Population	25803

Suggested Patients for Review	Number
Patients with a COPD monitoring code ever	166
Patients prescribed LAMA in L12M	44
Patients prescribed carbocisteine in L12M	34
Patients prescribed inhaled steroids in L12M but no asthma Dx	75
Patients with >9 antibiotics prescribed in L3Y but no asthma Dx	36

The first part of the summary sheet provides useful preliminary information including an up-to-date count of the practice population (currently registered patients) and a table summarising the patients who could be targeted for review. A list of the patients identified in each row can be found by clicking upon the relevant cell within the table.

What to note about this example practice

- 36 patients have been prescribed chest related antibiotics more than nine times in the last three years; these patients do not have an existing asthma diagnosis.

- 75 patients have been prescribed inhaled steroids during the last year but do not have an existing asthma diagnosis.

Smoking Status

Smoking Status	Number
Current smokers	604
Ex-smokers	1688

A table is provided showing the number of patients over the age of 35 recorded as being current smokers or ex-smokers within the practice. As COPD is predominantly caused by smoking, inclusion of smoking prevalence is useful when casefinding.

Prescribed Medication

The next part of the summary sheet gives information on the number of patients who have been prescribed medication that might be used to treat COPD, such as short and long acting beta$_2$ agonist (SABA and LABA), short and long acting muscarinic antagonist (SAMA and LAMA) and inhaled corticosteroid (ICS).

Prescribed Medication	Number
Patients prescribed LAMA in L12M	44
Patients prescribed LABA in L12M	21
Patients prescribed SAMA in L12M	15
Patients prescribed SABA in L12M	971
Patients prescribed inhaled steroids in L12M	795
Patients prescribed combined ICS/LABA in L12M	427
Patients prescribed carbocisteine in L12M	34

What to note about this example practice

- A number of patients have been prescribed a LAMA or LABA in the last 12 months. This medication is frequently used in patients with COPD*, so it would be worthwhile reviewing the records of these patients to check for a potential missing diagnosis code for COPD.
  NB: also used in patients with severe asthma so look for evidence of asthma in these patients

- A large number of patients have been prescribed inhaled steroids over the last 12 months. It would be worth viewing the datasheet to establish whether there are any other factors that might suggest COPD in these patients. Loading pre-set filter 1 within the datasheet view will identify patients on inhaled steroids who do not have asthma (or click on the relevant cell in the first table).

- 34 patients have been prescribed carbocisteine in the last 12 months. It would be worth reviewing these patients to check for COPD.

Evidence of Frequent Chest Problems

The next part of the summary sheet looks for evidence of frequent chest problems such as frequent respiratory exacerbation. This, along with other factors/symptoms, may indicate COPD.

Evidence of Frequent Chest Problems	Number
> 9 antibiotic prescriptions in L3Y	83
>2 oral steroid prescriptions in L3Y	218
>2 respiratory exacerbations in L3Y	103

What to note about this example practice

- There are a considerable number of patients (83) who have had more than nine antibiotic prescriptions in the last three years. The search only includes prescriptions for antibiotics primarily used for chest related infections (although not exclusively as such antibiotics can be used for other infections also). Patients with frequent chest infections, particularly those without a diagnosis of asthma, should be reviewed to ascertain the cause. Loading pre-set filter 2 within the CHART datasheet will list these patients.

- 103 patients have had more than two respiratory exacerbations in the last three years. It would be worthwhile checking whether these patients have some of the other key symptoms that suggest COPD. The CHART datasheet can provide a patient level view of all data items including smoking status, relevant medication and COPD symptoms.

COPD Symptoms

COPD Symptoms	Number
Exertional shortness of breath in L6M	42
Chronic cough in L6M	2
Wheeze in L6M	8
Regular sputum production in L6M	16
Frequent winter bronchitis	6
COPD monitoring code ever	166

The next section of the summary sheet looks for patients with key COPD symptoms (or a COPD monitoring Read code on their electronic record).

Patients who present with exertional breathlessness, chronic cough, wheeze, regular sputum production or frequent winter bronchitis (along with other symptoms) may need reviewing for COPD.

The presence of COPD related codes on a patient's record (such as history of COPD, at risk of COPD, suspected COPD) suggests they should be reviewed for a diagnosis.

What to note about this example practice

- 166 patients aged 35 or over who have a risk factor for COPD have a COPD 'monitoring' code present on their electronic record. These patients records should be reviewed to establish whether a diagnosis code is missing from the electronic record or whether they would benefit from a review.

- There are 42 patients with exertional shortness of breath. It would be worthwhile checking whether these patients have any additional symptoms/factors that might suggest COPD.

Asthma Symptoms

Asthma Symptoms	Number
Chronic dry cough in L6M	15
Nocturnal wheeze in L6M	0
Nocturnal shortness of breath in L6M	0

The inclusion of asthma symptoms on the CHART summary sheet is designed to give an indication of the number of patients who have classic asthma symptoms. These patients are less likely to need reviewing to establish whether their symptoms suggest COPD. It may be worthwhile establishing whether these patients truly have asthma or whether they could actually have COPD.

NICE guidance suggests you should consider a diagnosis of COPD in patients over 35, who are smokers/ex-smokers or who have been exposed to an external agent which may lead to COPD who have symptoms of COPD but **do not** have the clinical features of asthma (such as those listed above)[6].

Spirometry and Lung Function Tests

NICE Quality Statement 1[12] recommends that patients aged over 35 years who present with a risk factor and one or more symptoms of COPD should have post-bronchodilator spirometry.

The lung function test table shows those patients who may have been reviewed with spirometry in the past. These details can be viewed in the datasheet and may help to determine whether the patient has COPD or should be assessed further for COPD.

Spirometry and Lung Function Tests	Number
Patients with a lung function test ever	1043
Patients with COPD symptoms & post bronchodilator spirometry L6M **NICE Quality Statement 1**	0
Patients with a post bronchodilator predicted FEV1/FVC ever	227
Patients with a predicted FEV1/FVC ever	433
Patients with a post bronchodilator FEV1/FVC and predicted FEV1/FVC ever	225

What to note about this example practice

- Over 1,000 patients have a record of a lung function test. Some may be recorded using a generic term such as 'Spirometry' or 'Lung Function Testing' without an indication of the actual result.

View 2 – Datasheet view

The datasheet is an important part of the casefinder as it allows you to access patient level data and displays multiple factors simulatneously. When preparing the queries you can either run a pseudonymised set (with a reference as shown) or an identifiable set that will replace the reference number with identifiable information.

Reference	Age	Sex	Registration date	Latest Smoking Ever	Latest Smoking Date	Latest Smoking Status	Cigarette Pack Years Value	Cigarette Pack Years Date	Latest Other Risk Factor Ever	Latest Other Risk Factor Date	Asthma Ever	Asthma Date Click + to View Asthma Rubric
0001	45	F	14/07/06	1378.	31/07/06	Ex-smoker					H33..	04/12/00
0002	35	F	08/01/15	Ub1na	04/07/13	Ex-smoker					H33..	25/02/16
0006	60	F	10/09/15	137L.	03/08/16	Ex-smoker						
0010	60	M	10/01/12	137R.	19/04/16	Smoker						
0012	40	M	09/12/13	Ub1na	26/02/14	Ex-smoker						
0015	40	F	18/06/15	Ub0oq	06/06/16	Non Smoker					H33..	17/04/09
0020	35	M	18/01/00	137R.	09/01/15	Smoker					H33..	29/03/00
0025	95	F	02/08/96	Ub1na	14/08/13	Ex-smoker						
0027	50	F	05/12/11	XaXUL	25/06/14	Other					H33..	16/12/93

The datasheet columns are arranged into sections including smoking, related diseases, prescription data etc. Some columns in the datasheet are hidden in order to present the most pertinent information first. To access hidden columns, click on the plus signs towards the top of the datasheet (see image).

Pre-set filters

Two pre-set filters are provided to assist with the prioritisation of patients. Custom filters can also be created and saved as required.

> **Filter 1:** Patients who do not have asthma who have been prescribed inhaled corticosteroids in the last year

> **Filter 2**: Patients who do not have asthma who have had more than nine issues of antibiotics in the last three years

Once a filter has been loaded, review the surrounding data in the datasheet. Any recorded lung function information will be found on the right side of the datasheet. Undertake further clinical assessment to ascertain whether they have COPD.

Remember to clear any /applied filters before continuing in order to avoid accidentally filtering on a restricted datasheet.
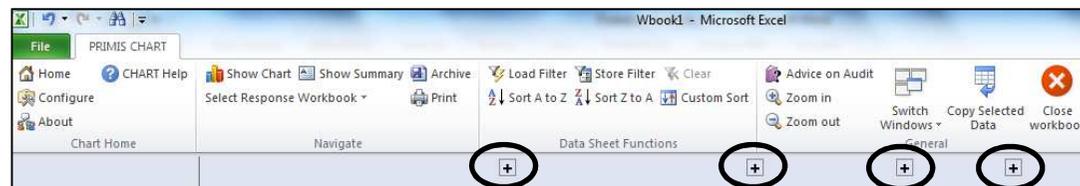
GRASP - COPD Care Management

The GRASP-COPD care management tool helps practices to answer the following questions:

- What is the practice prevalence rate for COPD?
- Are our COPD patients on the optimum treatment pathway based upon their disease severity?
- Are there any patients who would benefit from review?

GRASP-COPD care management output

The GRASP-COPD care management tool provides the following views in CHART:

1. Summary sheet - both dashboard view and classic view
2. Datasheet
3. Pre-set graphs (fourteen in total)

Detailed information on each of these data views can be found on the subsequent pages of this guide.

View 1 – CHART summary sheets

CHART summary sheets provide a snapshot of all the relevant data recorded by the practice. For GRASP-COPD care management there are two different summary sheet views available; a dashboard view and a classic view. The dashboard view provides a visual display of the data whereas the classic view presents data in tabular form.

Practice Population		25803			Dashboard View

Prevalence rate percentage	2.5%
Total Patients with COPD	634

COPD Severity Recording	Mild	Moderate	Severe	Very Severe	No Record/ No Value
Patients with recorded COPD severity calculated from either % predicted FEV1, post bronchodilator FEV1 or diagnostic term	152	330	102	21	29
Patients by latest mild,moderate, severe and very severe diagnostic Read codes	143	182	48	1	260

Stratification	Number	Percentage
Patients with MRC score 4-5	124	20%

Smoking Status	Number	Percentage
Patients with smoking status recorded L12M or never smoked recorded at any time	549	87%
Patients recorded as current smokers L12M	148	23%
Patients recorded as current smokers L12M with smoking cessation activity L12M	139	22%

GRASP-COPD Summary – Dashboard
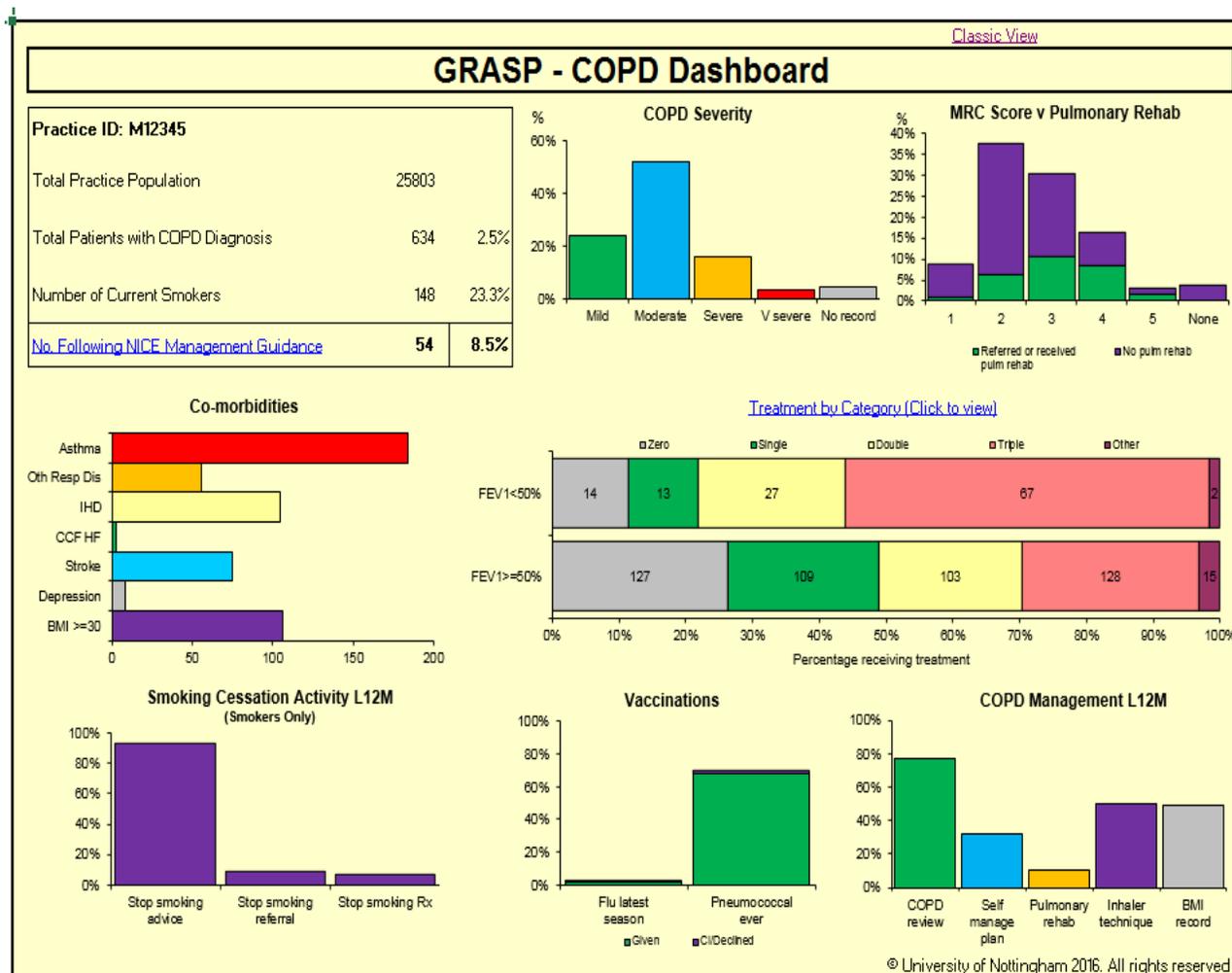
Close up snapshot images from each of these two views have been included in the commentary that follows.

Prevalence

The classic view and dashboard view of the summary sheet provide key statistical information including an up to date practice population, the number of patients with a coded diagnosis of COPD and the practice prevalence rate for COPD.

Practice ID: M12345		
Total Practice Population	25803	
Total Patients with COPD Diagnosis	634	2.5%
Number of Current Smokers	148	23.3%
No. Following NICE Management Guidance	54	8.5%

Practice Population	25803
Prevalence rate percentage	2.5%
Total Patients with COPD	634

If your practice prevalence rate is low compared to the national or peer average in your local area (the latter can be determined using CHART Online) then you should consider a strategy to look for the patients who are potentially missing a COPD diagnosis and screen high risk patients. The casefinder can help with this task.

The dashboard view also gives a quick reminder on the number of COPD patients who are current smokers. Smoking cessation is the only intervention that significantly reduces decline in lung function, symptoms and mortality [6, 8, 9].

What to note about this example practice

- The prevalence of COPD in this particular practice is higher than the current national average of 2%.[14] This may be due to the practice taking an active role in finding and diagnosing patients with COPD, resulting in a prevalence rate that is accurate, but at odds to the national average. They seem particularly adept at identifying patients with moderate COPD (see page 18).

- Where a high prevalence rate is not due to case finding activity, the practice should consider the accuracy of their coded diagnoses and review patients/records where diagnostic test results are absent or at odds with the diagnosis.

- There are 148 COPD patients who currently smoke. They should be targeted for smoking cessation support in order to improve outcomes.

- The care of 54 patients is deemed to satisfy all of the measurable NICE guidelines.

NICE Management guidance check

The hyperlink at the bottom of the view gives the practice an indication of how they are managing their COPD patients in relation to NICE guidelines[6] and quality statements[12].
Note: Only certain aspects of the NICE guidelines and quality statements are measurable in terms of data extraction and analysis.

COPD NICE Management Algorithm
Adapted from NICE clinical guideline 101: Management of chronic obstructive pulmonary disease in adults in primary and secondary care (partial update). June 2010.

	True	False
Smoking history recorded	Next	Reject
Smoker with no evidence of any advice in last year	Reject	Next
Annual review recorded in last year	Next	Reject
Inhaler technique recorded in last year	Next	Reject
BMI recorded in last year	Next	Reject
Self management plan in last year	Next	Reject
MRC score recorded in last year	Next	Reject
MRC score >=3 and no evidence of pulmonary	Reject	Next
MRC Score of 2 or less with admission in last year and no evidence of pulmonary rehab	Reject	Next
Very severe COPD and no oximetry	Reject	Next
Flu vaccination or C/I declined code in last/current season	Next	Reject
Pneumococcal vaccination ever	Select	Reject

NICE Quality Statements
Hover over the statement boxes below to view a description of each NICE statement. Please see the Analysis and Interpretation booklet for details as to how this has been implemented in this tool

	Num	Denom	%
Statement 2	318	480	66.3
Statement 3	1	9	11.1
Statement 4	80	220	36.4
Statement 5	1	17	5.9

Denom - the number of patients eligible for treatment

Num - the number of eligible patients treated

% - the percentage of eligible patients treated

For the purposes of this audit, in order for patients to be counted as following **NICE management guidelines**, they must satisfy the following criteria:

- Smoking history recorded for all patients with COPD
- Current smokers with evidence of advice in the last year
- Annual Review recorded in the last year
- Inhaler technique recorded in the last year
- BMI recorded in the last year
- Self management plan issued in the last year
- MRC score recorded in the last year
- If MRC score of 3 or more - evidence of pulmonary rehabilitation
- If MRC Score of 2 or less with admission in last year - evidence of pulmonary rehabilitation
- Oximetry recorded for those with very severe COPD
- Flu Vaccination or contraindication/declined code in last/current season
- Pneumococcal vaccination ever

For the purposes of this audit, for patients to be counted as following **NICE quality statements**, they must satisfy the following criteria:

Quality Statement	How criteria are satisfied
2. People with COPD who are prescribed an inhaler have their inhaler technique assessed when starting treatment and then regularly during treatment.	An inhaler must have been prescribed within the last six months. Patients with no record of an inhaler within the previous two years (6-30 months prior to the audit reference date) are deemed 'new' users and must have a record of having received an inhaler technique assessment sometime between a month prior to three months after issue of the inhaler. All other patients are deemed ongoing users and are expected to have received an inhaler technique assessment sometime during the last twelve months.
3. People with stable COPD and a persistent resting stable oxygen saturation level of 92% or less who have their arterial blood gases measured to assess whether they need long-term oxygen therapy.	Patients must have experienced no exacerbations during the last 12 months nor must they have a Read code suggesting unstable COPD recorded within this time period. Such patients will be deemed to have stable COPD.

At least two resting oxygen saturation levels of 92% or less must have been recorded within the last 12 months, the earliest and latest of which are at least six weeks apart.

An arterial blood gas measurement must have been made within the last 12 months. |
| 4. *People with stable COPD and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme.* | Patients must have experienced no exacerbations during the last 12 months nor must they have a Read code suggesting unstable COPD recorded within this time period. Such patients will be deemed to have stable COPD.

An MRC score of 3 or more has been recorded ever and a referral for pulmonary rehabilitation has also been recorded ever. |
| *5. People admitted to hospital for an acute exacerbation of COPD start a pulmonary rehabilitation programme within four weeks of discharge.* | A COPD admission date has been recorded within the last 12 months and a referral for pulmonary rehabilitation has been recorded within three months of this admission code.

An admission code is sought rather than a discharge code as the latter is unlikely to be recorded within primary care. A three month time period is permitted to allow completion of the necessary administration procedures to be completed. |

Severity of COPD

The next sections of the summary screen and dashboard look at disease severity.

Please note: Presently disease severity is determined by FEV_1 or FEV_1% predicted (percentage of normal). Ideally, severity should not just be based on FEV_1 but should incorporate a multifaceted approach and include parameters such as BMI, frequency of exacerbations, MRC dyspnoea score, health status (CAT score), hypoxia and presence of cor pulmonale[4,6]. For the purposes of this audit, FEV_1 is compared with diagnostic severity coding to allow practices to determine the accuracy of their coded diagnoses.
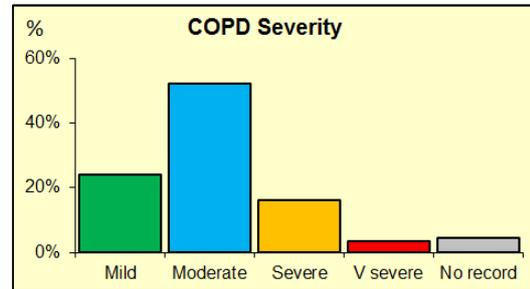
The summary sheet table compares the latest Read coded entry for severity with a calculated severity (based on either FEV_1 *or* coded entry – whichever is latest). This allows practices to assess the accuracy of their severity coding and review those patients where a mismatch occurs.

The figures from the top row of the table are used to produce the dashboard graph.

COPD Severity Recording	Mild	Moderate	Severe	Very Severe	No Record/ No Value
Patients with recorded COPD severity calculated from either % predicted FEV1, post bronchodilator FEV1 or diagnostic term	152	330	102	21	29
Patients by latest mild,moderate, severe and very severe diagnostic Read codes	143	182	48	1	260

What to note about this example practice

- There are 21 patients whose latest FEV_1 result (predicted or post bronchodilator) suggests 'very severe' COPD yet there is only one matching coded severity recorded. These patients either have no severity classification or one that is different to 'very severe'. The records of these patients should be reviewed to establish whether the severity coding is accurate.

- In the 'mild' category, nine patients have a coded severity without an FEV_1 result (predicted or post bronchodilator) recorded that supports this. Accessing the CHART datasheet will help with identifying the latest FEV_1 result for these patients (if one has been recorded).

- 260 patients have a generic coded entry of COPD but do not have their level of severity recorded. 29 of these do not have an FEV_1 value to suggest a severity either.

Treatment by Category

NICE guideline 101[6] uses severity of COPD (based on FEV_1) to categorise the treatment pathway. This is evidence based, and each pathway describes the most appropriate treatment for that patient with more treatment being added if the severity of their COPD increases. Included on the dashboard is a graph showing treatment by category:
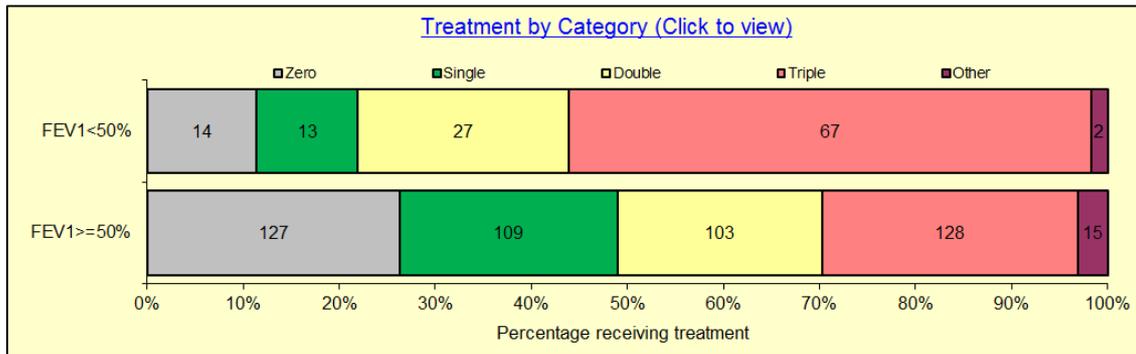
The FEV_1 label uses the recording of the FEV_1 or the COPD severity code whichever is the latest.

The categories of treatment are detailed in the hyperlinked area.The 'Other therapy' category includes the combination of LAMA and ICS and ICS alone. These are not recommended by NICE. The NICE algorithm for inhaled treatment in COPD is also included. Note this view does not include patients who have **not** had a percent of FEV_1 recorded.

The query library can help you to compare the severity of the disease with the patients' current treatment regime. For example there may be some patients with very severe COPD whose medication is inadequate (single therapy - LABA or LAMA) who would benefit from more intensive treatment. On the other hand there may be patients who have mild COPD who are on triple therapy (LABA, LAMA and ICS). Prescribing triple therapy will only be cost-effective if it is done according to the evidence-based guidelines from NICE, which detail when and in which people it will be most effective[6]. It may be more effective to encourage patients with mild COPD who smoke to quit, have an annual flu jab and/or receive pulmonary rehabilitation[4].

Results should be used as a prompt to review such patients in order to check the appropriateness of their treatment and to ensure no other pathology is causing their breathing problem.

|		
Patients with FEV1 <50% on triple therapy L6M	67	11%
Patients with FEV1 >=50% on triple therapy L6M	128	20%

What to note about this example practice

- The summary view table (shown above) shows highlights 128 patients with FEV_1 >=50% (pink bar) who are on triple therapy (LABA, LAMA and ICS). The effectiveness of triple therapy in patients with mild COPD is limited and therefore the appropriateness of this treatment should be assessed. It would be worthwhile establishing whether these patients are smokers, have had a flu jab and/or have attended pulmonary rehabilitation as a more appropriate way of improving quality of life.

- 14 patients have no medication recorded but have an FEV_1 <50%. You would expect patients with a more severe classification of COPD to be on more intensive therapy. It would be worthwhile reviewing this cohort of patients.

COPD management

The dashboard includes a graph that summarises key aspects of COPD care.

The level and frequency of the review of patients with COPD (recommended by NICE) is determined by the severity of their disease. For the purposes of this audit, records are searched for a review in the last 12 months.

COPD Management L12M
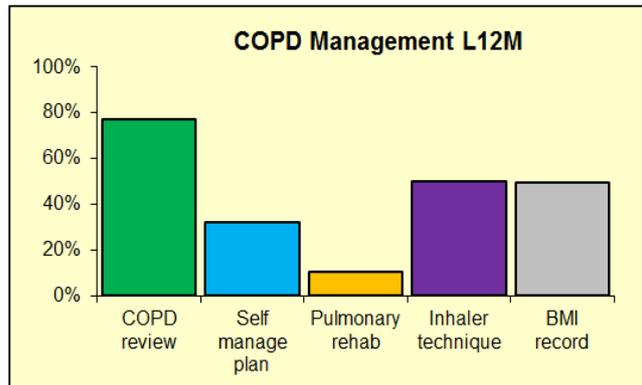
COPD Care	Number	Percentage
Patients with MRC dyspnoea score recorded L12M	500	79%
Patients with stable COPD, MRC dyspnoea score 3+ referred for pulmonary rehab **NICE Quality Statement 4**	0	0%
Patients with a COPD self-management plan recorded L12M	204	32%
Patients with a BMI value recorded L12M	314	50%

Self-management plans: Patient education and self care is vitally important in improving patient healthcare outcomes. Exacerbation plans are used specifically in combination with emergency antibiotics and steroids which are kept at home. Patients who are at high risk of exacerbations should be given a self management plan for exacerbation[6]. However, as not all patients benefit from these each individual case should be assessed.

Pulmonary rehabilitation is a key intervention which has been shown to improve breathlessness, exercise capacity and health related quality of life outcomes significantly[6]. Getting patients onto a pulmonary rehabilitation programme is of real benefit to the patient and is cost effective. An MRC dyspnoea score of 3 or more is considered functionally disabled and is often the criteria used for referral to pulmonary rehabilitation.
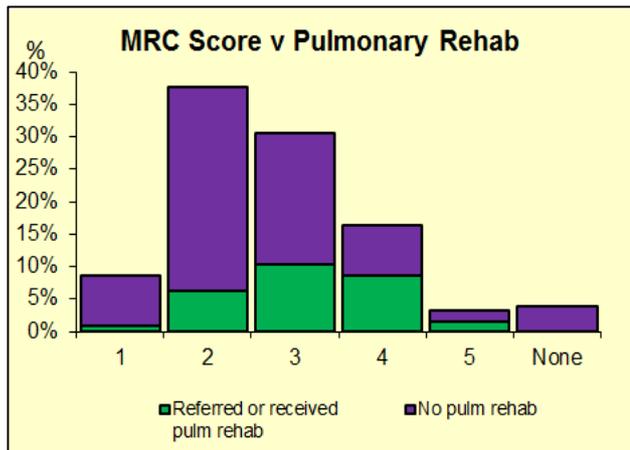
The query that provides the data for this graph searches for either evidence that a patient has been referred for or has received pulmonary rehabilitation.

Inhaler technique should be assessed on an annual basis as a minimum and more frequently in cases of severe COPD.

BMI should be recorded regularly as patients who are overweight may experience significant mobility problems and require assistance in losing weight. Also, patients with severe COPD can experience significant problems maintaining their weight due, in part, to the increased respiratory effort required to breathe and difficulties in eating. Underweight patients may require dietary assessment and possible dietary supplements. It is therefore important to monitor BMI.

What to note about this example practice

- The practice is performing well in terms of annual review of patients with COPD. A possible explanation for figures not being even higher may relate to the date ranges being searched upon (last 12 months) and the fact that the Quality and Outcome Framework (QOF) looks for a review in the last 15 months.

- A reasonable number of COPD patients are recorded as having a self-management plan in this practice. The appropriateness of such plans for other patients should be considered.

- Figures for pulmonary rehabilitation are quite low and the practice should determine whether referral could prove to be an effective method of treatment particularly for those patients with an MRC score of 3 or more.

- Inhaler technique assessment and BMI recording are generally low (particularly inhaler technique) and the practice should look to ensure these are recorded as standard during the patient's annual assessment.

Stratification (MRC dyspnoea score)

Stratification	Number	Percentage
Patients with MRC score 4-5	124	20%

This part of the summary screen looks at stratification. MRC score is used to categorise not only the degree of breathlessness the patient experiences but also the degree of disability this leads to. It is a useful way of looking at how COPD is affecting the patient's life and functional ability. It also gives clues as to whether there is something else wrong e.g. someone with mild COPD with a high MRC score may have another pathology causing their breathlessness.

What to note about this example practice

- There are 124 COPD patients with an MRC score of 4 or 5. These patients should be reviewed to establish whether their quality of life can be improved in any way.

Smoking status and smoking cessation activity

The next part of the classic view/dashboard reveals the smoking status of patients with COPD:

Smoking Status	Number	Percentage
Patients with smoking status recorded L12M or never smoked recorded at any time	547	86%
Patients recorded as current smokers L12M	148	23%
Patients recorded as current smokers L12M with smoking cessation activity L12M	139	22%

The first row of the table above gives an indication of how well smoking status is recorded for these patients. It then gives a breakdown of the number of current smokers and how many of those have evidence of smoking cessation activity in the last 12 months.

The dashboard shows the range of smoking cessation interventions offered in the last 12 months.

Smoking cessation is the most important intervention in patients with COPD as it is the only intervention that significantly reduces decline in lung function, symptoms and mortality[6,8,9].
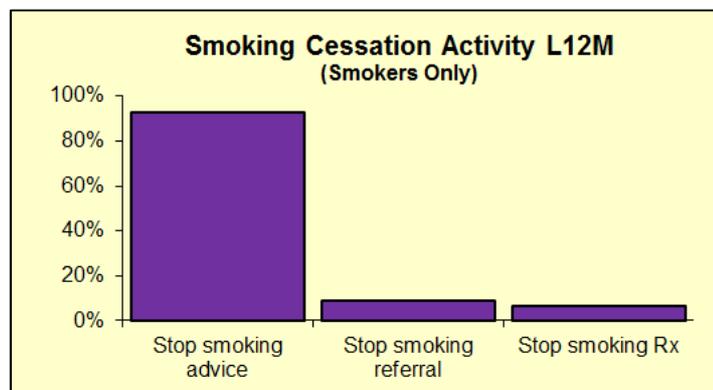
It is essential that smoking cessation advice is given to all COPD patients at every opportunity. Where smoking cessation therapies are initiated this should always be in conjunction with a support programme which can lead to better quit rates[6].

What to note about this example practice

- The smoking status of COPD patients in this practice is well recorded at 86%.

- There is also evidence of good activity in encouraging smokers to quit. Of the 148 current smokers, 139 have evidence of some form of smoking cessation activity in the last 12 months.

- Smoking cessation advice is the most popular intervention in this practice but it is not particularly successful (reflected by the number still smoking).

Vaccinations

All patients with COPD should be vaccinated against Influenza and Pneumococcal infection as vaccination has been shown to reduce death and hospitalisation rates.

Pneumococcal is a 'one off' injection whereas the flu vaccination is administered annually. As a result, the figures displayed for flu vaccination will depend largely on the date the queries are run. Low figures can be expected at the beginning of the flu vaccination season (September) but will steadily rise as vaccinations are given over the winter period. The flu vaccination search date range is 1st September to 31st August.
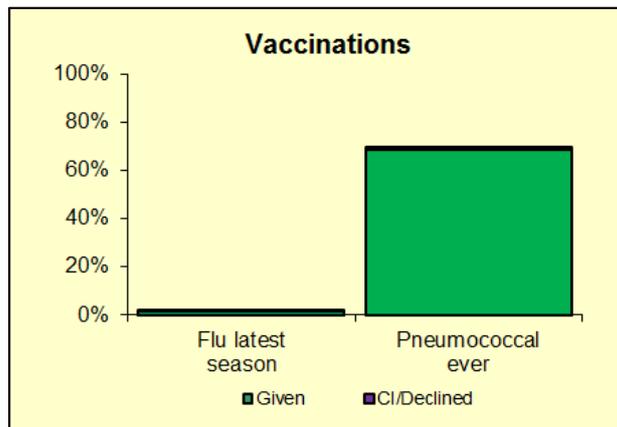
Vaccinations	Number	Percentage
Patients on COPD Register who have had a 'flu vaccination during the latest campaign	11	2%
Patients on COPD register who have had a pneumococcal vaccination ever	433	68%

What to note about this example practice

- Only 11 patients have received a flu vaccination. This is because the queries were run during October which is the start of the flu vaccination season. The queries should be re-run towards the end of the vaccination campaign to ensure that a high number of COPD patients have been vaccinated (or a contraindication recorded).

- There is a reasonably good vaccination rate for pneumococcal with 68% of COPD patients having been vaccinated.

Oximetry

Long term oxygen therapy (LTOT) in hypoxic patients can significantly improve survival[10,11]. Hence it is essential to identify these patients early so they can obtain maximum benefits from the intervention.

The simplest way to do this in primary care is to perform oxygen saturations on patients with COPD. Ideally this should be done on all COPD patients but particularly in those with severe or very severe COPD.

Patients on oxygen therapy with latest FEV1 >=50% or no COPD severity recorded	6	1%
Patients on oxygen therapy with pulse oximetry recorded L12M	14	2%
Patients with FEV1 <50 % who have had pulse oximetry	105	17%

Patients with oxygen saturations less than or equal to 92% should be referred for an oxygen assessment. In addition, patients with polycythaemia, cyanosis, peripheral oedema, raised JVP or very severe disease (i.e FEV_1% predicted < 30%) should be considered for referral for LTOT assessment.

What to note about this example practice

- 105 COPD patients have a pulse oximetry value recorded at this practice. This should be addressed in order to improve survival rates particularly in those with severe or very severe COPD. Pulse oximetry should be included at each review with the patient.

- 14 patients have oxygen at home and have had pulse oximetry recorded within the last 12 months. Patients who do have oxygen at home may be taking oximetry readings themselves. The practice may want to consider recording some of these if they feel it is a reliable source of information and of benefit to the patient.

Co-morbidity

The next table included on the classic view of the CHART summary sheet gives a snapshot of the number of COPD patients with existing co-morbidities such as heart failure, stroke, IHD or asthma:

Co-Morbidity	Number	Percentage
Patients with COPD who have a co-morbidity of asthma, IHD, CCF heart failure or stroke	340	54%
Patients with COPD who have an asthma Dx	184	29%

Knowledge of co-morbidities can help when deciding where to manage a patient's exacerbations (hospital or at home with a self-management plan) and helps you to understand generally how unwell they are or could become.

Sometimes there are diagnostic coding issues for patients who have COPD and asthma. Whilst it is acknowledged that patients can have both asthma and COPD diagnoses, if there is a high level of overlap between the diagnoses, it may prove useful to review these patients' diagnoses.

Depression

The classic view of the summary sheet gives an overview of the number of COPD patients who have a diagnosis of depression or have been screened for depression.

Depression Diagnosis and Treatment	Yes	No
Patients with COPD with/without Dx of depression L12M	8	626
Patients without depression diagnosis and screened / not	67	559

NICE guidance recommends that patients with COPD should be screened for anxiety or depression if they are hypoxic, severely breathless or have recently been seen or treated at hospital for an exacerbation[6]. For those with symptoms or a diagnosis of depression, consider whether you can do anything to improve quality of life, social support, mobility or symptom control.

View 2 - Graph view – COPD severity code v. latest FEV$_1$ %

There are several graph views available for this query set, one of which is shown below. This graph compares the coded severity of COPD with the patient's latest FEV$_1$ result (either % predicted FEV$_1$ or post-bronchodilator FEV$_1$).
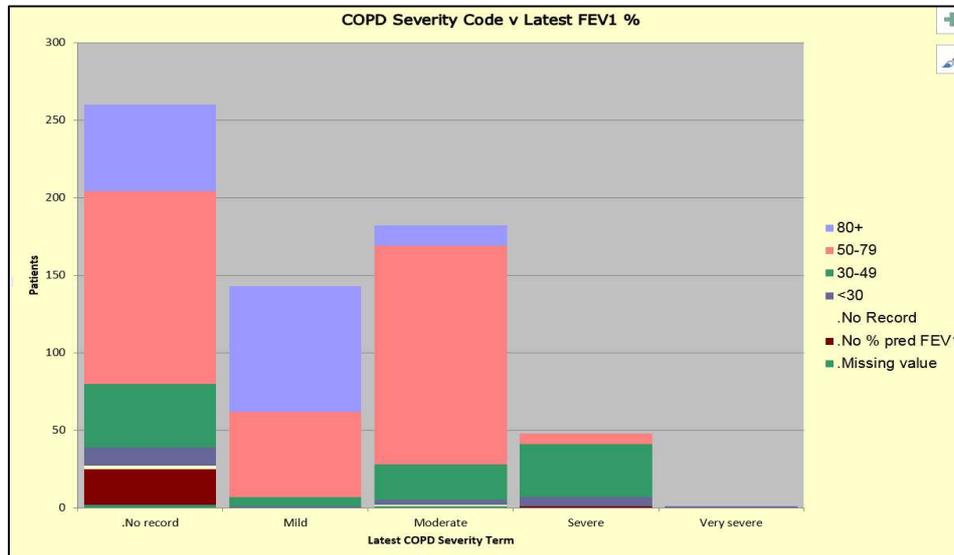
You would not expect to see any dark blue areas (indicating poor FEV$_1$) in the lower severity categories. Similarly you would not expect to see pink or light blue areas in the more severe COPD categories. If any patients have a % predicted FEV$_1$ of 100% or more, it might be worthwhile reviewing their COPD diagnosis in light of the fact that their lung capacity is better than expected.

Looking at the graph above, the practice may want to check those in the green area within the moderate and severe categories which they can easily do by drilling through this section of the graph to access the patient list. In this example, there are a large number of patients with no COPD severity term recorded. There are also a number of patients without any recorded FEV$_1$ data (the brown area of the bars) which is of concern for data quality purposes.

Many of the pre-set graphs replicate the data shown on the dashboard view but have the added bonus that they enable quick access to the patients included in each bar to be identified by clicking the bar to highlight it, clicking it again to select and then double-clicking to drill through to the filtered patient list.

A list of the patients included within the dark blue area of the moderate bar is shown below (pseudonymised results):

			COPD Severity Code v Latest FEV1 % - Moderate		
Return to Graph		Double cli by that co			
Reference	Age	Sex	Latest COPD Severity Ever	Latest COPD Severity Term	Latest COPD Severity Date
0413	85	F	XaEIW	Moderate	24/12/2014
0364	85	F	XaEIW	Moderate	03/11/2008
0104	65	M	XaEIW	Moderate	23/09/2009

View 3 - Datasheet view

The datasheet view allows you to access patient level data for all those included in the audit. When preparing the queries you can opt to run a pseudonymised set (as shown below with reference number) or a patient identifiable set that will return named patient information.

Reference	Age	Sex	Registration date	Earliest COPD Dx Ever	Earliest COPD Dx Date	Possible Unstable COPD L12M	Possible Unstable COPD Date Click + to View Unstable COPD rubric	Count of Exacerbations L12M	>2 Exacerbations L12M	Stable/Unstable COPD	Latest COPD Severity Ever	Latest COPD Severity Term	Latest COPD Severity Date
0001	75	F	03/03/86	H3...	23/03/15					Stable		.No record	
0002	75	M	26/07/12	XaEIV	11/08/10					Stable	XaEIV	Mild	11/08/10
0003	45	F	01/09/94	H3...	18/04/16			1		Unstable		.No record	
0004	65	M	02/08/96	H3...	05/08/10					Stable		.No record	
0005	75	M	22/05/89	H3122	19/10/03					Stable	XaEIY	Severe	09/03/04
0006	70	M	13/10/93	H3...	15/11/12					Stable		.No record	
0007	70	F	26/01/15	H3...	04/09/14					Stable		.No record	
0008	65	M	02/08/96	H3...	16/09/05			1		Unstable		.No record	
0009	70	M	11/02/16	H3...	29/12/08					Stable		.No record	
0010	70	M	24/12/93	H3...	06/07/88					Stable		.No record	
0011	65	M	02/02/16	H3...	18/02/03			1		Unstable		.No record	

Figure 19. Datasheet view – COPD care set

The datasheet is an essential tool for finding out more about any patients who appear to have missing data items or inaccurate recording. It allows more than one parameter to be viewed at the same time such as latest FEV_1, COPD severity diagnosis code, latest MRC score.

Pre-set filters

There are three pre-set filters within this query set. You can also create and apply your own custom filters. The pre-set filters available are:
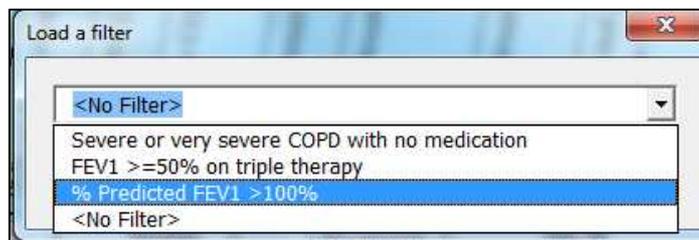
Filter 1:   Patients with severe or very severe COPD who are not on any medication

Filter 2:   Patients with a FEV_1 >50% who are on triple therapy

Filter 3:   Patients with a % predicted FEV_1 of 100% or more

Patients picked up by Filter 1 may need to be reviewed to determine their current treatment regime. Inclusion in this list may be due to the date range being searched upon (last six months).

Patients picked up by Filter 2 may need to be reviewed as the effectiveness of triple therapy in patients with mild COPD is limited. The appropriateness of treatment should be assessed in these patients. It would be worthwhile establishing whether these patients are smokers, have had a flu jab and/or have attended pulmonary rehabilitation as a more appropriate way of improving quality of life.

Patients picked up by Filter 3 may need to be reviewed to assess the accuracy of their COPD diagnosis as a % predicted FEV_1 of 100% or more suggests that their lung function is better than predicted.

Patients who have been reviewed and 'excluded'

If patients have been reviewed and have had COPD excluded by a lung function test, ensure a suitable code is added so that they can be excluded from future consideration.

Key questions for GP practices

- Are we caring for our patients with COPD as well as we could be?

- Are we actively preventing disease progression where we can?

- Are key data items being recorded routinely and accurately?

- Are we missing key aspects during annual checks with our COPD patients?

- How accurate is our COPD register?

  Are there patients in our practice with COPD who we don't know about?

- Are we treating our patients with COPD in a way that is cost effective?

- Do we need to review our policy on prescribing LABA, LAMA, LAMA+ICS and triple therapy?

- Is our treatment policy in line with NICE guidance and the NHS Outcomes Strategy for COPD[13]?

Recommended follow-up work

- Improvements to data recording and accuracy of clinical coding.

- Review of treatment policy for patients with COPD.

- Review effectiveness of influenza and pneumococcal vaccination recall procedures.

- Comparative data analysis using CHART Online – allowing comparison with peer practices.

References

[1] National Institute for Health and Care Excellence (NICE) (2016) Chronic obstructive pulmonary disease in adults. NICE quality standard 10 (QS10).

[2] British Thoracic Society (2006) The Burden of Lung Disease (2nd edition).

[3] Department of Health (2011) An Outcomes Strategy for Chronic Obstructive Pulmonary Disease (COPD) and Asthma.

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[5] Price D et al. Earlier diagnosis and earlier treatment of COPD in primary care. *Primary Care Respiratory Journal* (2011); 20(1): 15-22

[6] NICE clinical guideline 101. Management of chronic obstructive pulmonary disease in adults in primary and secondary care (partial update). June 2010.

[7] NICE (2011) Chronic Obstructive Pulmonary Disease Costing Report: Implementing NICE Guidance. National Institute for Health and Clinical Excellence.

[8] Tashkin D, D., Kanner et al. Smoking cessation in patients with chronic obstructive pulmonary disease: a double-blind, placebo-controlled, randomised trial. Lancet. 2001; 357(9268):1571-1575.

[9] Scanlon PD, Connett JE, Waller LA et al. Smoking cessation and lung function in mild-to-moderate chronic obstructive pulmonary disease - The Lung Health Study. American Journal of Respiratory & Critical Care Medicine. 2000; 161(2):381-390.

[10] Medical Research Council Working Party, Flenley DC. Long term domiciliary oxygen therapy in chronic hypoxic cor pulmonale complicating chronic bronchitis and emphysema. Lancet. 1981; 1(8222):681-686.

[11] Nocturnal Oxygen Therapy Trial Group. Continuous or nocturnal oxygen therapy in hypoxemic chronic obstructive lung disease: a clinical trial. Ann Intern Med. 1980; 93(3):391-398

[12] NICE quality standard [QS10]. Chronic obstructive pulmonary disease in adults. July 2011. Last updated February 2016.

[13] NHS (2012) NHS Outcomes Strategy for COPD and Asthma.

[14] British Lung Foundation *Chronic Obstructive Pulmonary Disease (COPD) statistics*. Available https://statistics.blf.org.uk/copd Last accessed: 21st December 2016

Appendices

1. Datasheet column list for COPD casefinder

Pseudonymised set	Patient identifiable set
Reference (MIQUEST pseudo ref)	Usual GP
	Reference (system ID number)
	NHS number
	Surname
	Forename

Both sets

Age	
Sex	
Registered_Date	
Latest Smoking Ever	
Latest Smoking Date	
Latest Smoking Status	
Cigarette Pack Years Value	
Cigarette Pack Years Date	
Latest Other Risk Factor Ever	
Latest Other Risk Factor Date	
Asthma Ever	**Asthma**
Asthma Rubric	
Asthma Date – *expand + to see columns listed above*	
Other Resp Dis Ever	**Other Resp Dis**
Other Resp Dis Rubric	
Other Resp Dis Date − *expand + to see columns listed above*	
IHD Ever	**IHD**
IHD Rubric	
IHD Date − *expand + to see columns listed above*	
CCF Ever	**CCF**
CCF Rubric	
CCF Date − *expand + to see columns listed above*	
Prescribed LAMA L12M	**LAMA**
LAMA Rubric	
Prescribed LAMA Date − *expand + to see columns listed above*	

Prescribed LABA L12M	**LABA**
LABA Rubric	
Prescribed LABA Date – *expand + to see columns listed above*	
Prescribed SAMA L12M	**SAMA**
SAMA Rubric	
Prescribed SAMA Date – *expand + to see columns listed above*	
Prescribed SABA L12M	**SABA**
SABA Rubric	
Prescribed SABA Date – *expand + to see columns listed above*	
Prescribed ICS L12M	**ICS**
ICS Rubric	
Prescribed ICS Date – *expand + to see columns listed above*	
Prescribed combined ICS/LABA L12M	**Combined ICS/LABA**
Combined ICS/LABA Rubric	
Prescribed combined ICS/LABA date – *expand + to see columns listed above*	
Prescribed Carbocisteine L12M	**Carbocisteine**
Carbocisteine Rubric	
Prescribed Carbocisteine Date – *expand + to see columns listed above*	

Count Antibiotic Issues L3Y
>9 Antibiotic Issues L3Y
Count Oral Steroid Issues L3Y
>2 Oral Steroid Issues L3Y
Count Respiratory Exacerbations L3Y
>2 Respiratory Exacerbations L3Y
Exertional SOB L6M
Exertional SOB Date
Chronic Cough L6M
Chronic Cough Date
Wheeze Recorded L6M
Wheeze Recorded Date
Reg Sputum Prod L6M
Reg Sputum Prod Date

Earliest Chronic Bronchitis Last Winter Code	**Bronchitis**
Earliest Chronic Bronchitis Last Winter Date	
Latest Chronic Bronchitis Last Winter Code	
Latest Chronic Bronchitis Last Winter Date	
Earliest Chronic Bronchitis This Winter Code	
Earliest Chronic Bronchitis This Winter Date	
Latest Chronic Bronchitis This Winter Code	
Latest Chronic Bronchitis This Winter Date	
Frequent Winter Bronchitis – *expand + to see columns listed above*	

COPD Symptoms
COPD Monitoring Ever
COPD Monitoring Date
Chronic Dry Cough L6M
Chronic Dry Cough Date
Nocturnal Wheeze L6M
Nocturnal Wheeze Date
Nocturnal SOB L6M
Nocturnal SOB Date
Asthma Symptoms
Lung Function Test Ever
Lung Function Test Date

Post Broncho Spiro Ever	**Post Broncho Spiro**
Post Broncho Spiro Date	
Post Broncho Spiro Exc L12M	
Post Broncho Spiro Exc Date	
Post Broncho Spiro & COPD Symptoms – *expand + to see columns listed above*	

Post Broncho Predict FEV1/FVC Ever
Post Broncho Predict FEV1/FVC Date
Predicted FEV1/FVC Ever
Predicted FEV1/FVC Date
Count of Co-Morbidities
Count of COPD Risk Factors

2. Datasheet column list for COPD care management

Pseudonymised set	Patient identifiable set
Reference (MIQUEST pseudo ref)	Usual GP
	Reference (system ID number)
	NHS number
	Surname
	Forename

Both sets

Age	
Sex	
Registered_Date	
Earliest COPD Dx Ever	
Earliest COPD Dx Date	
Possible Unstable COPD L12M	**Unstable COPD**
Possible Unstable COPD Rubric	
Possible Unstable COPD Date − *expand + to see columns listed above*	
Count of Exacerbations L12M	
>2 Exacerbations L12M	
Stable/Unstable COPD	
Latest COPD Severity Ever	
Latest COPD Severity Term	
Latest COPD Severity Date	
Latest FEV1/FVC Ratio Post b-Dilator Value	**FEV1 Data**
Latest FEV1/FVC Ratio Post b-Dilator Date	
Latest FEV1/FVC Ratio Value	
Latest FEV1/FVC Ratio Date	
% Predicted FEV1 Post b-Dilator Value	
% Predicted FEV1 Post b-Dilator Term	
% Predicted FEV1 Post b-Dilator Date	
% Predicted FEV1 Value	
% Predicted FEV1 Term	
% Predicted FEV1 Date	
Latest % Predicted FEV1 Category − *expand + to see columns listed above*	
Latest COPD Diagnostic/FEV1 Status	
Latest MRC Score Ever	
Latest MRC Score Date	
MRC Score L12M	

Latest MRC Score Value	
Latest MRC Value 3+	
MRC L12M or Ever	
Latest COPD Admission L12M	
Latest COPD Admission Date	
Latest Ref for Pul Rehab Ever	
Latest Ref for Pul Rehab Date	
Ref for Pul Rehab L12M	
Ref for Pul Rehab & MRC Score 3+	
Ref for Pul Rehab Within 3M of Admission	
Earliest Resting O2 Sat <=92% L12M	**Resting O2 Sat**
Earliest Resting O2 Sat <=92% Date	
Latest Resting O2 Sat <=92% L12M	
Latest Resting O2 Sat <=92% Date	
Persistent Resting O2 Sat <=92% – *expand + to see columns listed above*	
Arterial Blood Gas Measurement L12M	
Arterial Blood Gas Measurement Date	
Art Blood Gas Measured After Low O2 Sat	
O2 Therapy L12M	
O2 Therapy Date	
Pulse Oximetry L12M	
Pulse Oximetry Date	
O2 Therapy & FEV1 >=50% or No Record	
O2 Therapy & Pulse Oximetry L12M	
FEV1 <50% & Pulse Oximetry Status	
LABA L6M	**LABA**
LABA Rubric	
LABA Date – *expand + to see columns listed above*	
LAMA L6M	**LAMA**
LAMA Rubric	
LAMA Date – *expand + to see columns listed above*	
ICS L6M	**ICS**
ICS Rubric	
ICS Date – *expand + to see columns listed above*	

Combined ICS/LABA L6M	**Combined ICS/LABA**
Combined ICS/LABA Rubric	
Combined ICS/LABA date – *expand + to see columns listed above*	
Inhaler L6M	
FEV1 <50% on Triple Therapy L6M	
FEV1 >=50% on Triple Therapy L6M	
LABA Prev 24M	**Inhaler Prev 24M**
LAMA Prev 24M	
ICS Prev 24M	
Combined ICS/LABA Prev 24M	
Inhaler Prev 24M – *expand + to see columns listed above*	
Inhaler status	
Latest Inh Tech Check L12M	
Latest Inh Tech Check Date	
New Rx - Inh Tech Checked	**Inhaler Technique**
Ongoing Rx - Inh Tech Checked	
Inhaler Technique Status – *expand + to see columns listed above*	
Count Antibiotic Issues L3Y	
>9 Antibiotic Issues L3Y	
Latest Smoking Ever	
Latest Smoking Status Ever	
Latest Smoking Date	
Latest Smoking Status L12M	
Latest Smoking Cessation Referral L12M	**Smoking Cessation**
Latest Smoking Cessation Referral Date	
Any Smoking Cessation Activity L12M	
Any Smoking Cessation Activity Date	
Latest Smoking Cessation Rx L12M	
Latest Smoking Cessation Rx Date	
Smokers with Any Cessation Activity – *expand + to see columns listed above*	
Cessation Activity Status	
Seasonal Flu Vacc Latest Season	
Seasonal Flu Vacc Latest Season Date	
Seasonal Flu Vacc L15M	
Seasonal Flu Vacc Date	

Reason Flu Vacc Not Given Latest Season
Reason Flu Vacc Not Given Date
Reason Flu Vacc not Given L15M
Reason Flu Vacc Not Given L15M Date
Seasonal Flu Vaccination Status
Pneumococcal Vacc Ever
Pneumococcal Vacc Date
Reason Pneumo Vacc Not Given Ever
Reason Pneumo Vacc Not Given Date
Pneumococcal Vaccination Status
Latest COPD Review L12M
Latest COPD Review Date
Latest COPD Review Status
COPD Self Management Plan L12M
COPD Self Management Plan Date
COPD Self Management Plan Status
Latest BMI L12M
Latest BMI Status
Latest BMI Date
BMI Recording Status

01 Reason for Non Treatment L12M	
01 Reason for Non Treatment Term	
01 Reason for Non Treatment Date	
02 Reason for Non Treatment L12M	
02 Reason for Non Treatment Term	
02 Reason for Non Treatment Date	
03 Reason for Non Treatment L12M	
03 Reason for Non Treatment Term	
03 Reason for Non Treatment Date	
04 Reason for Non Treatment L12M	Reason for non treatment
04 Reason for Non Treatment Term	
04 Reason for Non Treatment Date	
05 Reason for Non Treatment L12M	
05 Reason for Non Treatment Term	
05 Reason for Non Treatment Date	
06 Reason for Non Treatment L12M	
06 Reason for Non Treatment Term	
06 Reason for Non Treatment Date	
07 Reason for Non Treatment L12M	

07 Reason for Non Treatment Term	**Reason for non treatment**
07 Reason for Non Treatment Date	
08 Reason for Non Treatment L12M	
08 Reason for Non Treatment Term	
08 Reason for Non Treatment Date	
09 Reason for Non Treatment L12M	
09 Reason for Non Treatment Term	
09 Reason for Non Treatment Date	
10 Reason for Non Treatment L12M	
10 Reason for Non Treatment Term	
10 Reason for Non Treatment Date	
Reasons for Non Treatment − *expand + to see columns listed above*	
Asthma ever	
Asthma rubric	**Asthma**
Asthma date − *expand + to see rubric column above*	
Other resp disease ever	
Other resp disease rubric	**Other Resp Dis**
Other resp disease date − *expand + to see rubric column above*	
IHD ever	
IHD rubric	**IHD**
IHD date − *expand + to see rubric column above*	
CCF ever	
CCF rubric	**CCF**
CCF date − *expand + to see rubric column above*	
Stroke ever	
Stroke rubric	**Stroke**
Stroke date − *expand + to see rubric column above*	
Any co-morbidity	

Depression L12M	
Depression rubric	**Depression**
Depression date − *expand + to see rubric column above*	
Depression Screening L12M	
Depression Screening Date	
No Depression Dx Received Screening	