



An Roinn Sláinte
Department of Health

Management of Chronic Obstructive Pulmonary Disease (COPD)

National Clinical Guideline No. 27

SUMMARY November 2021



This National Clinical Guideline has been developed by the Guideline Development Group (GDG) supported by the National Clinical Programme for Respiratory.

Using this National Clinical Guideline

This National Clinical Guideline applies to the management of adults with COPD and is relevant to all healthcare professionals caring for people with this condition.

Disclaimer

NCEC National Clinical Guidelines do not replace professional judgment on particular cases, whereby the clinician or health professional decides that individual guideline recommendations are not appropriate in the circumstances presented by an individual patient, or whereby an individual patient declines a recommendation as a course of action in their care or treatment plan. In these circumstances the decision not to follow a recommendation should be appropriately recorded in the patient's healthcare record.

Users of NCEC National Clinical Guidelines must ensure they have the current version by checking the relevant section in the National Patient Safety Office on the Department of Health website:
<https://www.gov.ie/en/collection/c9fa9a-national-clinical-guidelines/>

Whilst every care has been taken to ensure that all information contained in this publication is correct, the Department of Health cannot accept responsibility for any errors or omissions which may have occurred.

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Membership of the Guideline Development Group (GDG)

The GDG was chaired by Dr Desmond Murphy (2020 to date) and Prof Tim McDonnell, (2014 -2019) as the Clinical Leads of the National Clinical Programme (NCP) for Respiratory. This National Clinical Guideline is supported by the GDG NCP for Respiratory, the Integrated Care Programme for Chronic Disease, Irish College of General Practitioners (ICGP), the Irish Thoracic Society (ITS), and the Royal College of Physicians Ireland (RCPI).

Membership nominations were sought from a variety of clinical and non-clinical backgrounds so as to be representative of all key stakeholders within the respiratory services. GDG members included those involved in COPD clinical practice, education, administration, research methodology, clinical risk and quality assurance as well as two persons representing patients and the public. Membership nominations were sought from a variety of clinical and non-clinical backgrounds so as to be representative of all key stakeholders within the acute and community sectors whilst also being cognisant of geographical spread and urban/rural representation. GDG members included those involved in clinical practice, education, administration, research methodology, and persons representing patients and family carers and support groups.

Members were recruited and invited to partake in the GDG on the provision that they provided justifiable expertise and /or viewpoints to the group, offering valuable contributions based on their extensive knowledge in the field of COPD, and/or professional experience of working with people with COPD, and/or knowledge of a healthcare sector.

Appendix 1 contains the terms of reference for the GDG. Members were not compensated for their involvement or contribution to the GDG and were informed that it was on a voluntary basis.

Table 1: Members of the COPD Guideline Development Group

Name	Job title and affiliation
Dr Desmond Murphy (Chair 2020 to date) Prof. Tim McDonnell (Chair 2014-2019)	Clinical Lead, NCP for Respiratory, HSE
Dr Mark O Kelly	ICGP HSE Primary Care Lead for Integrated Care Programme (COPD)
Mr Michael Drohan	Patient Representative
Ms Rosie Hassett (2018-2020) Ms Patricia Davis (2020- 2021)	Interim Nurse Service Planner, NCP for COPD/Respiratory
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Ms Linda Kearns (2014-2018) Ms Susan Curtis (2019- date)	Programme Manager, NCP for COPD, HSE Programme Manager, NCP for Respiratory, HSE
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Mr Peter O’Toole	Advanced Nurse Practitioner, representative NCP
Mr Damien Peelo (2013-2017) Ms Bernie Murphy (2017-2018) Ms Joan Johnston (2020 to date)	CEO of COPD Support Ireland (Patient Representative group) CEO of COPD Support Ireland (Patient Representative group) National Coordinator, COPD Support Ireland
Ms Edel Russell (2019)	Dietetic Representative, NCP for Respiratory
Ms Suzanne Seery (2016-2017)	Dietetic Representative, NCP for Respiratory
Ms Marian Wyer (2017)	Nursing & Midwifery Planning & Development (NMPD) Officer, HSE

National Clinical Guidelines

Providing standardised clinical care to patients in healthcare is challenging. This is due to a number of factors, among them diversity in environments of care and complex patient presentations. It is self-evident that safe, effective care and treatment are important in ensuring that patients get the best outcomes from their care.

The Department of Health is of the view that supporting evidence-based practice, through the clinical effectiveness framework, is a critical element of the health service to allow delivery of safe and high-quality care. The National Clinical Effectiveness Committee (NCEC) is a Ministerial committee set up in 2010 as a key recommendation of the report of the Commission on Patient Safety and Quality Assurance (2008). The establishment of the Commission was prompted by an increasing awareness of patient safety issues in general and high-profile health service system failures at home and abroad.

The NCEC on behalf of the Department of Health has embarked on a quality assured National Clinical Guideline development process linked to service delivery priorities. Furthermore, implementing National Clinical Guidelines sets a standard nationally, to enable healthcare professionals to deliver safe and effective care and treatment while monitoring their individual, team and organisation's performance.

The aim of these National Clinical Guidelines is to reduce unnecessary variations in practice and provide an evidence base for the most appropriate healthcare in particular circumstances. As a consequence of Ministerial mandate, it is an expectation that NCEC National Clinical Guidelines are implemented across all relevant services in the Irish healthcare setting.

The NCEC is a partnership between key stakeholders in patient safety. NCEC's mission is to provide a framework for national endorsement of clinical guidelines and clinical audit to optimise patient and service user care. The NCEC has a remit to establish and implement processes for the prioritisation and quality assurance of clinical guidelines and clinical audit so as to recommend them to the Minister for Health to become part of a suite of National Clinical Guidelines and National Clinical Audit. The aim of the suite of National Clinical Guidelines is to provide guidance and standards for improving the quality, safety, and cost-effectiveness of healthcare in Ireland. The implementation of these National Clinical Guidelines will support the provision of evidence-based and consistent care across Irish healthcare services.

NCEC terms of reference

1. Provide strategic leadership for the national clinical effectiveness agenda.
2. Contribute to national patient safety and quality improvement agendas.
3. Publish standards for clinical practice guidance.
4. Publish guidance for National Clinical Guidelines and National Clinical Audit.
5. Prioritise and provide quality assurance for National Clinical Guidelines and National Clinical Audit.
6. Commission National Clinical Guidelines and National Clinical Audit.
7. Align National Clinical Guidelines and National Clinical Audit with implementation levers.
8. Report periodically on the implementation and impact of National Clinical Guidelines and the performance of National Clinical Audit.
9. Establish sub-committees for NCEC work streams.
10. Publish an annual report.

Table of contents

Section 1: National Clinical Guideline recommendations		1
1.1	Summary of recommendations	1
1.2	Summary of good practice points	8
Section 2: Development of the National Clinical Guideline		13
2.1	Background	13
2.2	Clinical and financial impact of COPD	16
2.3	Rationale for this National Clinical Guideline	24
2.4	Aim and objectives	25
2.5	Guideline scope	26
2.6	Conflict of interest statement	26
2.7	Sources of funding	26
2.8	Guideline methodology	26
	Step 1: Formulate the key questions	27
	Step 2: Search methodology	28
	Step 3: Screen and appraise the evidence	28
	Step 4: Develop and grade the recommendations	29
2.9	Consultation summary	29
2.10	International external review	31
2.11	Implementation	31
2.12	Monitoring and audit	34
2.13	Plan to update this National Clinical Guideline	35
Section 3: Appendices		36
7	Logic model & Implementation plan	37
9	Supporting tools	64

1

National Clinical Guideline recommendations

1.1 Summary of recommendations

This National Clinical Guideline outlines recommendations for healthcare professions on the care of individuals with COPD and is based on the highest quality scientific evidence currently available. This guideline is not intended to replace the healthcare professional's (HCPs) expertise or experience but is a tool to assist the practitioner in their clinical decision-making process with consideration to their patients' preferences. COPD is a complex disease that requires the input of multiple care providers.

As recognised in Sláintecare, the 10-year cross political vision for the future of Irish healthcare services, improvement and sustainability of Irish healthcare is dependent on a shift from acute to primary care. In line with Sláintecare and the End-to-End COPD Model of Care (2019) from the NCP Respiratory, the GDG recommend that although each recommendation is considered separately in this document, as a model for COPD we advocate for a wide spectrum of care across integrated respiratory services.

This will be achieved by increasing integration and collaboration between acute hospitals, community services and General Practitioners (GP) thereby enabling patient care delivery closer to home.

The responsibility for implementation of this guideline rests with relevant Consultants, GPs, nurses, physiotherapists, pharmacists, and other HCPs.

To assist the reader of this guideline, details of the key to the grading of evidence and recommendations are in Appendix 5.

Pharmacological Management of COPD		
Recommendation		Grade of recommendation
Recommendation 1 <i>Short-acting bronchodilators</i>	1.1 Inhaled short-acting beta 2 agonists (SABAs) or short-acting anti-muscarinic (SAMAs) should be prescribed to patients with confirmed COPD where rescue therapy is needed.	Grade A (GOLD)
Recommendation 2 <i>Long-acting bronchodilators</i>	2.1 Long-acting bronchodilators should be offered to patients with confirmed stable COPD who continue to have respiratory symptoms (e.g. dyspnoea or cough).	Grade A (GOLD)
	2.2 Inhaled long-acting muscarinic antagonists (LAMAs) and long-acting beta agonists (LABAs) both significantly improve lung function, breathlessness and reduce exacerbations.	Grade A (GOLD)
	2.3 LAMAs have a greater impact on exacerbation frequency compared to LABAs.	Grade A (GOLD)
	2.4 LABA/LAMA combination therapy has a more profound impact on forced expiratory volume in one second (FEV1) and symptoms than monotherapy.	Grade A (GOLD)
	2.5 LAMA/LABA in combination has a greater impact on exacerbation frequency than monotherapy.	Grade A (GOLD)
Recommendation 3 <i>Inhaled corticosteroids</i>	3.1 Offering an inhaled corticosteroid (ICS) to patients with confirmed stable COPD as first line therapy is not routinely recommended.	Grade A (Department of Veteran Affairs) (Implied in GOLD)
	3.2 Regular treatment with ICS increases the risk of pneumonia especially in those with severe disease and should be considered before considering addition of ICS in such patients.	Grade B (GOLD)
	3.3 ICS should however be considered in patients with Asthma-COPD Overlap Syndrome (ACOS).	Expert Opinion (GDG)
	3.4 Stable state blood eosinophil levels may be used to influence whether or not ICS should be used. Patients with blood eosinophils less than 0.1×10^9 are deemed unlikely to benefit while those with levels greater than 0.3×10^9 are most likely to benefit.	Grade B (GOLD)

	<p>3.5 An ICS combined with a LABA is more effective than the individual components in improving function and health status and reducing exacerbations in patients with exacerbations and moderate to very severe COPD.</p> <p>3.6 Triple inhaled therapy with ICS/LAMA/LABA improves lung function, symptoms and health status and reduces exacerbations compared to ICS/LABA, LAMA/LABA or LAMA monotherapy.</p>	<p>Grade A (GOLD)</p> <p>Grade A (GOLD)</p>
<p>Recommendation 4</p> <p><i>Inhaler technique</i></p>	<p>4.1 It is recommended that each patient commenced on an inhaler device would be provided with instructions and a demonstration of proper inhalation technique prior to using the device and that such technique is checked with re-education on a regular basis subsequently. Inhaler technique and adherence to therapy should be assessed before concluding that current therapy is insufficient and a change in therapy considered.</p>	<p>Expert Opinion (GDG) (GOLD)</p>
<p>Recommendation 5</p> <p><i>Roflumilast</i></p>	<p>5.1 In selected patients with the chronic bronchitic phenotype of COPD with severe to very severe air flow obstruction and history of exacerbations, a phosphodiesterase-4 (PDE-4) inhibitor may be reasonable add on therapy with a LAMA and LABA and possibly ICS. Roflumilast is not approved for reimbursement under the community drug schemes.</p>	<p>Grade A (GOLD)</p>
<p>Recommendation 6</p> <p><i>Theophylline</i></p>	<p>6.1 In certain selected patients, the addition of a theophylline may be reasonable.</p>	<p>Grade B (GOLD)</p>
<p>Recommendation 7</p> <p><i>Prophylactic use of macrolide antibiotics</i></p>	<p>7.1 In patients who have severe COPD with two treated exacerbations, the addition of azithromycin may be considered for one year.</p> <p>7.2 This needs to be done in conjunction with respiratory specialist advice, with surveillance for bacterial resistance and side effects such as impaired hearing and cardiac arrhythmias. The potential for benefit may be less in active smokers. The use of azithromycin in this manner represents an off-label use of this medicine but is recommended in many guidelines. When considering treatment, patients should be otherwise on optimal therapy.</p>	<p>Grade A (GOLD)</p> <p>Expert Opinion (GDG)</p>

<p>Recommendation 8 <i>Antioxidants and mucolytics</i></p>	<p>8.1 The use of mucolytic and antioxidants in routine practice for management of patients with COPD is not recommended.</p>	<p><i>There are currently insufficient studies to recommend use in COPD</i></p>
<p>Recommendation 9 <i>Leukotriene antagonists</i></p>	<p>9.1 A role for leukotriene receptor antagonists in the management of patients with COPD is not recommended.</p>	<p><i>Expert Opinion (GDG)</i></p>
<p>Recommendation 10 <i>Alpha One Anti-trypsin Deficiency (AATD) Augmentation Therapy</i></p>	<p>10.1 It is recommended that AATD augmentation therapy might be considered in young patients who have not smoked or are ex-smokers with an FEV1 of 35-60% predicted with continued and progressive disease.</p> <p>The National Centre for Pharmacoeconomics did not recommend reimbursement of AATD augmentation therapy in an Irish context following completion of a pharmacoeconomic evaluation, as cost-effectiveness was not demonstrated.</p>	<p><i>Grade B (GOLD)</i></p>
<p>Non-Pharmacological Management of COPD</p>		
<p>Recommendation 11 <i>Smoking cessation</i></p>	<p>11.1 Smoking cessation measures are recommended for the prevention, delay, and management of COPD, to include advice on smoking cessation, nicotine replacement therapy (NRT) and pharmacotherapy.</p> <p>At the moment, the effectiveness and safety of E cigarettes as a smoking cessation aid remains uncertain.</p>	<p><i>Grade A (GOLD)</i></p>
<p>Recommendation 12 <i>Influenza vaccination</i></p>	<p>12.1 The provision of an annual influenza vaccination is recommended.</p>	<p><i>Grade A (GOLD)</i></p>
<p>Recommendation 13 <i>Pneumococcal vaccination</i></p>	<p>13.1 The provision of the pneumococcal vaccination is recommended.</p>	<p><i>Grade B (GOLD)</i></p>
<p>Recommendation 14 <i>Pulmonary rehabilitation</i></p>	<p>14.1 The provision of pulmonary rehabilitation to stable patients with exercise limitation despite pharmacological treatment is recommended.</p> <p>14.2 The provision of pulmonary rehabilitation to patients who have recently been hospitalised for an acute exacerbation of COPD is recommended.</p>	<p><i>Grade A (GOLD)</i></p> <p><i>Grade B (GOLD)</i></p>

<p>Recommendation 15</p> <p><i>Oxygen therapy provision</i></p>	<p>15.1 The provision of long-term oxygen therapy to patients with chronic stable hypoxemia with a PaO₂ less than 7.3kPa or a PaO₂ between 7.3 and 8kPa with signs of tissue hypoxia (haematocrit greater than 55%, pulmonary hypertension or cor pulmonale) is recommended.</p> <p>15.2 The provision of oxygen for patients with moderate hypoxemia, nocturnal desaturation, or exercise-induced desaturation in patients with COPD is not routinely recommended.</p>	<p>Grade A (GOLD)</p> <p>Grade A (GOLD)</p>
<p>Recommendation 16</p> <p><i>Nutrition support</i></p>	<p>16.1 Nutrition support should be considered in all malnourished patients with COPD.</p>	<p>Grade B (GOLD)</p>
<p>Recommendation 17</p> <p><i>Lung volume reduction</i></p>	<p>17.1 Lung volume reduction surgery is recommended for carefully selected patients with upper lobe emphysema and low post rehabilitation exercise capacity.</p> <p>17.2 In selected patients, bullectomy can also be recommended.</p> <p>17.3 In selected patients with advanced emphysema, bronchoscopic interventions can reduce end-expiratory lung volume and improve exercise tolerance; health status and lung function at 6 to 12 months following treatment. Endobronchial valves (Grade A); Lung coils (Grade B); Vapour ablation (Grade B).</p>	<p>Grade A (GOLD)</p> <p>Grade C (GOLD)</p> <p>Grade A/B (GOLD)</p>
<p>Recommendation 18</p> <p><i>Lung transplantation</i></p>	<p>18.1 It is recommended that appropriately selected patients with very severe COPD be considered for lung transplantation surgery.</p>	<p>Grade C (GOLD)</p>
<p>Recommendation 19</p> <p><i>Monitoring of spirometry</i></p>	<p>19.1 In stable, diagnosed COPD patients, FEV1 may be tracked by spirometry every two years.</p>	<p>Expert Opinion (GDG)</p>
<p>Recommendation 20</p> <p><i>Role of palliative care</i></p>	<p>20.1 For advanced COPD care, patients should be referred to a palliative care specialist as appropriate.</p>	<p>Expert Opinion (GDG)</p>
<p>Management of Exacerbations in COPD</p>		
<p>Recommendation 21</p> <p><i>Bronchodilator therapy</i></p>	<p>21.1 The initiation of short-acting acute bronchodilator therapy (salbutamol, ipratropium, or combination) is recommended for patients with an exacerbation of COPD.</p>	<p>Grade C (GOLD)</p>

<p>Recommendation 22</p> <p><i>Steroids</i></p>	<p>22.1 A course of systemic steroids (prednisolone recommended dose of 40mgs once daily for five days) to be administered orally to all patients is recommended. Therapy should not routinely be administered for longer than this.</p>	<p>Grade A (GOLD)</p>
<p>Recommendation 23</p> <p><i>Antibiotics</i></p>	<p>23.1 Oral antibiotics use for patients with exacerbations of COPD associated with increased dyspnoea and associated increased sputum purulence or volume is recommended. First line antibiotic choices should include doxycycline, amoxicillin, or a macrolide, reserving broader spectrum antibiotics such as quinolones for specific indications are recommended. However, the choice of antibiotics may be modified due to local bacterial resistance patterns or an individual's sputum microbiology.</p>	<p>Grade B (GOLD/Expert Opinion GDG)</p>
<p>Recommendation 24</p> <p><i>Non-invasive ventilation (NIV)</i></p>	<p>24.1 The use of non-invasive ventilation in patients with acute exacerbations of COPD who develop acute respiratory failure associated with respiratory acidosis is recommended i.e. a PaCO₂ greater than 6kPa and an arterial pH less than 7.35, which is persistent following rationalisation of delivered oxygen therapy.</p>	<p>Grade A (GOLD)</p>
<p>Recommendation 25</p> <p><i>COPD Outreach Service</i></p>	<p>25.1 The COPD outreach team should be involved as early as possible in the care of patients admitted to hospital with an exacerbation of COPD.</p>	<p>Expert Opinion (GDG)</p>
<p>Recommendation 26</p> <p><i>COPD care should be delivered by a multidisciplinary team</i></p>	<p>26.1 It is recommended that a multidisciplinary team of respiratory specialists are key to delivering integrated care for COPD.</p>	<p>Expert Opinion (GDG)</p>
<p>Recommendation 27</p> <p><i>Theophylline</i></p>	<p>27.1 The use of theophylline in acute exacerbations of COPD is not recommended.</p>	<p>Grade B (GOLD)</p>

Oxygen therapy prescribing and monitoring in COPD		
<p>Recommendation 28</p> <p><i>Oxygen therapy prescribing and monitoring in COPD</i></p>	<p>28.1 For acutely unwell patients with COPD who are hypoxic and potentially at risk for hypercapnia a target saturation range (SpO₂) of 88-92% is suggested pending arterial blood gas (ABG) results.</p> <p>28.2 Patients discharged home following hospitalisation on oxygen therapy should be evaluated for the need to remain on long term oxygen therapy (LTOT) 60-90 days after discharge and during a period of relative clinical stability. LTOT should not be continued if patients do not meet the criteria.</p> <p>28.3 Routinely offering ambulatory LTOT for patients with chronic, stable COPD and isolated exercise-induced hypoxemia is not recommended.</p> <p>28.4 Patients with stable COPD, with persistent evidence of hypoxaemia (i.e. SpO₂ ≤92%) should be assessed for LTOT</p> <p>28.5 The provision of long-term oxygen therapy to patients with chronic stable hypoxemia with a PaO₂ less than 7.3 kPa or a PaO₂ between 7.3 and 8kPa with signs of tissue hypoxia (haematocrit greater than 55%, pulmonary hypertension or cor pulmonale) is recommended.</p> <p>28.6 The provision of oxygen for patients with moderate hypoxemia, nocturnal desaturation, or exercise-induced desaturation in patients with COPD is not routinely recommended.</p>	<p>Expert Opinion (GDG)</p> <p>Expert Opinion (GDG)</p> <p>Grade A (GOLD)</p> <p>Expert Opinion (GDG)</p> <p>Grade A (GOLD)</p> <p>Grade A (GOLD)</p>
Pathways, Bundles and Checklists for Managing Acute Exacerbation of COPD		
<p>Recommendation 29</p> <p><i>Pathways, bundles, and checklists for managing acute exacerbation of COPD</i></p>	<p>29.1 It is recommended that an admission and discharge bundle be applied to all patients admitted to hospital with an exacerbation of COPD.</p>	<p>Expert Opinion (GDG)</p>

1.2 Summary of Good Practice Points

Table 2: Summary of good practice points from recommendations

<p>Recommendation 4: <i>Inhaler technique</i></p>	<p>Offering advice and education alone is not sufficient to assist patients with adherence and self-management with medications. They should be encouraged to be partners in decisions about their treatments, in particular when it comes to inhaler device selection. Technique and adherence should be checked at every clinical appointment for their COPD.</p>
<p>Recommendation 11: <i>Smoking cessation</i></p>	<p>The determination of smoking status, delivery of a brief intervention, prescription for stop smoking medications and referral to intensive stop smoking support services should be considered standard for the prevention and treatment/management of COPD.</p> <ul style="list-style-type: none"> • Smoking status should be recorded and treatment with NRT/stop smoking medication as well as referral to intensive stop smoking services should be offered on hospital admission as well as on discharge with supporting clinical forms and documentation amended to include this. • Intensive stop smoking services should be included in both the prevention and treatment/management of COPD including consideration of referral to HSE QUIT services. • Promotion of the local stop smoking services and the National Quit line to include potential referral/self-referral if agreeable, and include advice/education on the benefits of quitting for COPD. • All patients with tobacco dependence should be given brief smoking cessation advice by a suitably trained healthcare professional at every intervention. • Staff should be trained in brief intervention techniques as such as the 5 A strategy to aid those with tobacco dependence: Ask, Advise, Assess, Assist and Arrange and Making Every Contact Count (MECC) training.
<p>Recommendation 12: <i>Influenza vaccination</i></p> <p>Recommendation 13: <i>Pneumococcal vaccination</i></p>	<p>When offering or recommending vaccinations staff should illustrate benefits, potential side effects and provide HSE patient information leaflets on influenza and pneumonia vaccinations.</p> <ul style="list-style-type: none"> • If a patient is recommended to have vaccinations by specialist staff this should be documented in correspondence to their GP.
<p>Recommendation 14: <i>Pulmonary rehabilitation</i></p>	<ul style="list-style-type: none"> • All appropriate patients should be offered referral to a Pulmonary Rehabilitation Programme. • Self-management education is key in supporting patients with COPD to give them the skills, knowledge, and confidence to manage their condition. • Healthcare professionals should provide education on COPD, medication management, self-management and life-style changes. • Teams should be multi-disciplinary.

<p>Recommendation 15: <i>Oxygen therapy provision</i></p>	<p>Patients who require an assessment for oxygen therapy should be referred to an oxygen assessment and review clinic for a formal assessment.</p> <ul style="list-style-type: none"> • Patients on LTOT should be reviewed on a regular basis. • Education and training on the safe use of LTOT should be part of initial and subsequent assessments and on commencement of Ambulatory Oxygen Therapy (AOT). • Risk assessments should be performed before prescribing oxygen.
<p>Recommendation 16: <i>Nutrition support</i></p>	<p>Malnutrition screening should be carried out by trained healthcare staff, across all settings, using a validated screening tool.</p> <ul style="list-style-type: none"> • Attention should be paid to changes in weight in older adults, particularly if the change is more than 3kg. Malnutrition screening should follow. • Individuals identified as being at risk of malnutrition, and/or obesity, should be considered for referral for a nutrition assessment – see local referral criteria. (Note: Obesity and malnutrition can co-present). • Those with muscle wastage (sarcopenia) should be considered for referral to a dietitian for nutritional assessment along with exercise prescription. • Nutrition support should be considered in people with, or at high risk of, malnutrition and COPD. • Referral to Speech and Language Therapy (SLT) should be considered in patients with swallowing difficulties and/or in patients with evidence of recurrent aspiration-related infections, to determine if silent aspiration may be a contributing factor to a patient’s symptoms.
<p>Recommendation 19: <i>Monitoring of spirometry</i></p>	<p>It is recommended that staff conducting spirometry should have undertaken a recognised training programme and relevant updates to ensure quality assured spirometry.</p> <ul style="list-style-type: none"> • Ensuring accurate diagnosis is fundamental to the effective implementation of guidelines. It is reliant on the clinical history and confirmation of airflow obstruction by spirometry. • Quality assured spirometry should be provided with the ability for results to be accessed routinely from both primary and secondary care.

<p>Recommendation 20: <i>Role of Palliative Care</i></p>	<p>Patients experiencing refractory cough or breathlessness having been provided optimal treatment should be considered for referral to palliative care for symptom management.</p> <p>Aspects of non- specialist palliative care to consider early in the disease include the following:</p> <ul style="list-style-type: none"> • Symptom management, including targeting dyspnoea, pain, fatigue. • Responding to anxiety and depression that is prevalent with the disease. • Assisting in understanding the disease trajectory and advice and support relating to advanced planning. • Consider the use of a handheld fan and low-dose oral morphine for the management of breathlessness in the end-stage COPD patient. <p>Triggers for referral to specialist palliative care services include the following:</p> <ul style="list-style-type: none"> • FEV1 less than 30%. • Increased hospitalisations (greater than 3 in the last year) with advanced age or multiple co-morbidities. • Poor functional status. • Patients on long-term oxygen therapy. • mMRC grade 4. • Breathlessness at rest or on minimal exertion between exacerbations. • Signs and symptoms of right heart failure. • More than six weeks of systemic steroids for COPD in the preceding six months. • Careful sensitive explanation as to the nature of the referral needs to be had with patients prior to referral. • Referral to SLT for discussions regarding the patient's preferences in relation to eating and drinking, in particular patients may choose to eat and drink accepting risk of aspiration for quality of life purposes. SLTs can provide recommendations regarding comfortable consistencies. SLTs may assist in providing communication support for clients at the End of Life stage to promote quality of life.
<p>Recommendation 25: <i>COPD Outreach service</i></p>	<p>All patients who fit the criteria should be referred to a COPD outreach service.</p>
<p>Recommendation 26: <i>COPD care should be delivered by a multidisciplinary team</i></p>	<p>Physicians, specialist physiotherapists and nurses should be involved as appropriate in a patients care to promote integrated services across hospital and community settings in providing specialist support, advice and education.</p> <ul style="list-style-type: none"> • Referrals to other MDT members are made on an individual case by case basis.

Recommendation 28:
***Oxygen therapy
prescribing
and monitoring in COPD***

Once oxygen is commenced in the hospitalised patient close monitoring of blood gases is required to ensure satisfactory oxygenation without carbon dioxide retention and/or worsening acidosis.

- A requirement to increase supplemental oxygen delivery to maintain a patient's targeted SpO₂ may be a sign of acute clinical deterioration which requires immediate medical review.
- Oxygen therapy in the hospitalised patient with COPD;

The Irish National Early Warning System (INEWS) is a monitoring/scoring system used in all Irish acute hospitals to assist in the recognition and management of the acutely unwell non-pregnant adult (≥16 years) in-patient. One of the limitations of this system is in patients with COPD and hypercarbic respiratory failure. INEWS allocates a score of between 0 (least risk) and 3 (highest risk) to each of seven physiological parameters including respiratory rate, supplemental oxygen and oxygen saturation (SpO₂). A score of '3' (highest risk) is allocated for any supplemental oxygen. INEWS also captures but does not allocate a score to the mode of oxygen delivery (i.e. nasal cannula, facemask etc.). Furthermore, a requirement to increase supplemental oxygen delivery to maintain a patient's targeted SpO₂ is a sign of acute clinical deterioration which requires immediate medical review. This increasing oxygen requirement is not captured in INEWS (a score of 3 is given for ANY oxygen) thus this further patient deterioration may not be reflected in the patient's INEWS score. INEWS V2 has been published in 2021 and recognises that patients with a confirmed diagnosis of COPD or other chronic respiratory conditions often have a tolerance for lower baseline SpO₂ levels and in most COPD patients the target saturations should be lower. This lower baseline SpO₂ combined with a score of 3 for supplemental oxygen can cause unnecessary triggering of the INEWS system in ill but otherwise stable patients. INEWS V2 addresses this problem through the use (at the discretion of a Registrar or Consultant) of a Modified Escalation and Response Protocol. For further information please refer to the full NCEC NCG No. 1 INEWS V2 (57).

Long Term Oxygen Therapy

- Patients who require an assessment for oxygen therapy should be referred to an oxygen assessment clinic for a formal assessment.
- Patients on LTOT should be reviewed on a regular basis.
- Education and training on the safe use of LTOT should be part of initial and subsequent assessments and on commencement of AOT.

Recommendation 29: <i>Pathways, Bundles, and checklists for managing acute exacerbation of COPD</i>	<p>A COPD admission and discharge bundle should be initiated on patients admitted with exacerbations of COPD upon arrival in the Emergency Department or Acute Medical Assessment Unit. For further information and resources see “End to End COPD Model of Care 2019 “ and following link . https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-discharge-bundle-nccp-2018.pdf</p> <p>https://www.hse.ie/eng/services/publications/clinical-strategy-and-programmes/copd-acute-management-bundle.pdf</p> <p>Recording of smoking status and treatment with NRT/stop smoking medications and referral to intensive stop smoking services should be considered at admission.</p> <p>On the discharge bundle, in addition to consideration of referral to stop smoking services, where NRT/stop smoking medications were administered during hospital admission, a prescription for NRT/stop smoking medications should be provided if the patient is amenable to same.</p> <p>Given the high risk of medication errors at the points of admission to and discharge from secondary care, pharmacy input at these stages of the patient pathway is recommended to minimise the risk of medication errors, provide additional patient education, and help optimise outcomes for patients.</p>
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2

Development of this National Clinical Guideline

2.1 Background

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines Chronic Obstructive Pulmonary Disease (COPD) as: *“a common, preventable and treatable disease that is characterised by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases”*.(2)

The disease is pathologically made up of two components: obstructive bronchiolitis with chronic bronchitis and parenchymal destruction (emphysema). The relative contribution of each component varies from patient to patient.(3)

COPD has considerable impact on the quality of life of the patient, families, and carers, involving on-going medical care, frequent hospital admissions for treatment of exacerbations and often resulting in premature death. At least 1,500 patients die each year of this disease and over 15,000 patients are admitted to hospital with COPD in Ireland. It has a profound effect on patients but also has a significant strain on the health service. (1)

As COPD prevalence in Ireland has never been measured at a national level, exact figures for its prevalence and burden in Ireland are not known. Based on the 2011 census, it is estimated that almost 500,000 people aged 40 years and over in Ireland have COPD, of whom over 200,000 have moderate or severe disease and only half are likely to be diagnosed. (4) The lowest estimates of prevalence are those based on self-reporting of a doctor diagnosis of COPD or equivalent condition. For example, most national data show that less than 6% of the adult population has been told that they have COPD. (2)

Many with COPD may be undiagnosed, especially those with milder disease, but when diagnosed at a late stage, COPD health interventions are both less effective and more expensive. All studies show an increase in COPD prevalence with increasing age; in people aged greater than 70 years, the prevalence may be 20% in men and 15% in women. (5) Most studies confirm an increased prevalence in men. Probably in part due to different age distribution and varying environmental exposures, prevalence varies considerably between European countries. (4) The global international, population-based, Burden of Lung Disease (BOLD) studies, which used standardised survey methods and a spirometric criterion for COPD, reported a prevalence of moderate – severe COPD (i.e., excluding mild disease) in Europe of 10%. (5)

Given the mortality and relatively high rate of hospitalisation for COPD in Ireland, Irish prevalence figures may well be as high. Extrapolating from studies done elsewhere in Europe suggests a prevalence of 275,000 cases based on a doctor-made diagnosis, to 500,000 cases based on cross-sectional surveys. (6) It is estimated that the population aged greater than 35 years in Ireland could increase by 51%-94% by 2036. This ageing Irish population together with current and historical smoking prevalence means that the health burden of COPD in Ireland will continue to increase and be a significant burden to people, health services and society for the foreseeable future. With the increasing convergence in smoking rates between males and females, the prevalence rate for COPD in women may in the future equal or even surpass that of men. (7) Projected estimates by the Institute for Public Health for 2020 suggest that in Ireland there is likely to be a 23% increase in the number of adults with clinically diagnosed chronic airway obstruction, with one third of this increase due to increases in the size of the population and two thirds due to population ageing. (6) Risk factor identification is important both for prevention and treatment of COPD. (1, 8-10)

Table 3: Risk factors for COPD

Host Factors	Environmental Factors
Genes (C)	Inhalational particles
Gender (A)	Outdoor air pollution (C if heavy)
Age (A)	Indoor air pollution (C if heavy)
Growth and development of the lung (A)	Occupational exposures (C if heavy)
Oxidative stress	Tobacco smoke (C)
Respiratory airway hypersensitivity (A)	Social and economic level* (A)
Co-morbidities (A)	Respiratory Infections (A)

(A) Additive, (C) Causal adapted from The Australian Lung Foundation (2001)

Footnote:

*Social and economic factors are proxies for nutritional status, crowding, exposure to pollutants including work exposures and smoking exposure, access to health care and early respiratory infections.

2.1.1 Smoking and COPD

Smoking is a factor in 85% of those with COPD. The prevalence of COPD is directly related to the prevalence of cigarette smoking but not all people with the same smoking history will develop COPD. Most of those affected have smoked over 20 pack years (20 per day for 20 years). (11-13) Up to 50% of lifelong smokers develop COPD. Genetic and other factors modify an individual’s risk from smoking. (14) The proportion of the risk of COPD attributable to smoking is estimated at 40–60%, depending on how many risk factors are taken into account. Although never-smokers are less likely to have COPD, never-smokers comprise about one-quarter of those classified with moderate-severe disease (GOLD stage II+ COPD). (14) Individuals highly exposed to passive smoking (greater than 40hr/week for greater than 5 years) are 48% more likely to present with COPD than are unexposed individuals. (15, 16)

The results of the Healthy Ireland survey published in 2019 found that 17% of the population (aged 15 and over) smoke on a daily basis, this has reduced from 23% in 2015. (17) Of this, 14% admitted to smoking daily, while a further 3% identified themselves as occasional smokers (this 17% represented 19% of the male and 16% of the female population, respectively). Smoking rates were highest among young adults (25 years). Twenty-eight percent of the population were ex-smokers. Smoking rates were higher in more deprived areas (24%) than in more affluent areas (14%). Smoking rates were also higher in the unemployed (40%) and in those without a third level education (20%), than they were for those in employment (18%) and in those with degree level education (11%). Nineteen percent of parents of children aged under 18 were smokers. Twenty-one percent of fathers and 17% of mothers were smokers. Forty percent of current smokers had tried to quit during the previous year, and 28% were either trying to quit or actively planning to do so.

2.1.2 E-cigarettes

Five percent of the population use e-cigarettes and a further 12% have tried them at some point. Ten percent of current smokers use e-cigarettes, with 13% of ex-smokers using them. Twenty-five percent of those aged between 25 and 34 years of age have tried e-cigarettes, with 8% currently using them. Twenty percent of men have tried e-cigarettes compared to 14% of women. Five percent of men and 3% of women currently use them. Given that the effects of cigarettes on COPD development can have a lag period of 15-20 years; these rates may have significant health implications for the medium and long term.

2.1.3 Social and Economic Factors

COPD is inversely associated with socio-economic status. The association between COPD and socio-economic factors relates not just to an individual's lifestyle and genetic determinants but also to socio-economic public policies such as housing standards, air pollution, nutrition and service provision. The effects are reflected in risk factors for COPD – the smoking rates in Ireland among those in more deprived social groups as reported above are high compared with the national rate. Among homeless men in Dublin the smoking prevalence was 78%. (18) These social and economic gradients are reflected not just in the prevalence of smoking but also in the prevalence of COPD and the outcome for those with COPD in terms of morbidity and mortality.

2.1.4 Other Contributing Factors

A serious, but often underappreciated risk factor for COPD is lack of awareness of the condition among HCPs and the public. Lack of awareness is a risk factor in terms of delayed diagnosis and delayed effective intervention to slow progression of the disease. People with COPD often delay seeking medical help.

Polymorphisms of many genes or combinations of genes may increase (or decrease) the risk of an individual developing COPD. The best documented genetic risk factor for COPD is hereditary α 1-Antitrypsin Deficiency. The incidence of severe (ZZ homozygotes) α 1-Antitrypsin Deficiency in the Irish population is estimated to be 1 in 2,100. (19)

Early life environmental factors such as mothers who smoke, frequent respiratory infections and asthma in childhood and bronchial hyper-reactivity are increasingly recognised as important risk factors for COPD. The proportion of the risk of COPD attributable to these early childhood events may be as great as that attributable to smoking. There is an overlap of up to 30% between people with a diagnosis of COPD and asthma. (20, 21)

The World Health Organization (WHO) estimates that urban air pollution causes 1% of COPD cases in high-income countries such as Ireland. (22) It also plays a role in the exacerbation of COPD in those with the disease. In Dublin, in the year following the banning of bituminous coal there were approximately 116 fewer respiratory deaths. (23) The relevance of short-term, high peak exposures compared with long-term, low-level exposures is not yet known.

Occupational dust, chemicals and vapours can both cause and increase the risk of COPD independently of cigarette smoking, but they also increase the risk of the disease in the presence of those exposed to smoke. (13) Among adults aged 30-75 years the percentage portion of COPD attributable to work is estimated at 19.2% overall. In never-smokers, the percentage portion of COPD attributable to occupational exposure is estimated to be 30%. (24) While the current understanding of risk factors for COPD is incomplete, it is sufficient for action to be taken.

2.1.5 COPD & COVID-19

The first case of coronavirus recorded in the Republic of Ireland was on 29th February 2020; with the first death from COVID-19 occurring on 11th March 2020. (25) Although a new virus, knowledge is accumulating rapidly about the characteristics of the virus, the course of the illness, the manner of transmission and the management of those who acquire the infection. It has been clear from early on that patients with chronic respiratory illness, including COPD are more susceptible to the effects of the virus.

The respiratory symptoms associated with COVID-19 are similar to those experienced by patients with COPD, including shortness of breath and cough. There is likely to be some overlap between the symptoms, however the main symptom which appears to differentiate usual COPD exacerbations from COVID-19 is the presence of a "new" fever. Fever is the most common of any symptom in confirmed cases of COVID-19. (26)

Where possible the clinical management of the patient will aim to facilitate and support their care at home and in the community. This will be led by the patient's GP and public health policy, including prompt implementation of recommended infection prevention and control measures and supportive management of complications. COPD patients should continue all current treatments to improve their overall level of disease control, thereby reducing the risk of exacerbation.

Chronic respiratory diseases such as COPD are possible factors associated with an increased risk for severe disease. In severe cases, COVID-19 may lead to respiratory failure. Patients with this level of disease will clearly require hospital-based management. Guidelines and pathways have been completed to support care in this cohort of patients.

The focus of the NCP Respiratory has been on restoring services in both the acute and community settings as quickly as possible but within infection control guidelines. This has included the potential redesign of services where possible and providing sustainable changes to minimise the impact on respiratory services going forward.

COVID-19 has accelerated the need for integrated respiratory services to continue the treatment of respiratory patients including both COPD and COVID-19 patients. The NCP Respiratory is building on current momentum with practical strategies to actively restructure and redesign respiratory services preparing for a long-term commitment for integrated community-based teams to meet patient's needs. There is a need to enhance and sustain the progress made during the on-going crisis. The scope of this NCEC document has allowed the GDG with the NCP to adapt recommendations where appropriate for COPD patients with COVID-19. The recommendations still apply and some cases have been expanded to incorporate telehealth such as Virtual Pulmonary Rehabilitation, Virtual Early Supported Discharge/Outreach and escalating the need to provide more community-based services.

2.2 Clinical and financial impact of condition/disease

2.2.1 Burden of Disease in Ireland

COPD has considerable impact on the quality of life of the patient, involving long-term medical care, frequent hospital admissions for many, and often resulting in premature death. As with many chronic conditions, COPD not only affects the patient, but also has significant impact on the carer, and family as well as the health services and wider society.

The burden of COPD, as for other chronic diseases, is expressed in terms of disability-adjusted life years (DALYs), which are a composite of life lost due to premature death from COPD (YLL), and years lived with disability due to COPD (YLD). The Global Burden of Disease (GBD) study compared the contribution of major diseases worldwide in 2010. Among leading causes of death, COPD ranked 3rd, while for years lived with disability (YLD), it ranked 5th.(4,16) When death and disability are combined as DALYs, globally COPD ranked 9th in 2010. In the same study, COPD was the 4th highest cause of DALYs in Ireland.

2.2.2 Morbidity

It is difficult to get a measure of the prevalence of the burden of COPD in Ireland and estimates vary widely. In 2015 the Irish Health Survey was conducted by the CSO office. Participants were questioned about their conditions for the 12-month period previous to the survey. Conditions included chronic bronchitis, COPD, or emphysema. (27) The results estimated the prevalence of COPD to be 3% in those aged 45 to 54 years; 7% in those aged 55 to 64 years, 7% in those aged 65 to 74 years, and 8% in those aged 75 years and above. The link between socio-economic status and prevalence of COPD is clear; with 2% of those in the 'very affluent' category reporting a diagnosis of COPD (and related), and 6% of those in the 'very disadvantaged' category reporting same.

The majority of people with COPD are managed in General Practice. Hence, GP patient presentation data would provide an excellent guide as to the burden of COPD in Irish society. However, data on the number of COPD consultations in General Practice is not available. It is estimated that approximately 14.5% of all GP consultations are for respiratory disease. (28)

2.2.3 Mortality

The Global Burden of Disease (GBD) study reported COPD as the third leading cause of death globally in 2010. (29) The age standardised (to the European Standard Population) death rate for COPD, as reported in 2011, was 27.87 for Ireland compared with 18 per 100,000 inhabitants for the WHO European region. Only three countries (Denmark, Moldova, and Hungary) had rates higher than Ireland.(5) In 2013, the most recent year for which comparable EU data are available, rates of mortality from respiratory diseases (including cancer of trachea, bronchus, and lung) were 40% higher in Ireland than the EU-28 average (193.1/100,000 vs. 137.1/100,000). (30)

In Ireland in 2016, there were 3,856 deaths registered as respiratory disease (excluding lung cancer). Deaths due to chronic lower respiratory disease (n = 1,711) and deaths due to pneumonia (n = 1049) account for 72% of these deaths. When cancer of the larynx/trachea/bronchus/lung are included (a further 1,928 deaths), respiratory diseases accounted for 19% of all registered deaths in 2016.

Deaths registered as due to chronic lower respiratory disease are under-estimates, as people with COPD often succumb to other COPD co-morbidities especially pneumonia, or non-respiratory causes in particular cardiovascular disease. While the size of this under-estimation is unknown in Ireland, the literature would suggest that for more than 60% of people with COPD, co-morbidity other than COPD may be listed as the primary cause of their death. Under recognition and under diagnosis of COPD affect the accuracy of mortality data. While COPD is frequently the primary cause of death it is also true that it may be listed as a contributory cause of death or omitted from that certificate entirely. An Irish audit showed that the in-hospital mortality for those with COPD was 3.3% and the 90-day mortality was 8.3%. (31)

In Ireland, almost 70% of excess winter mortality from respiratory disease arises in the poorest three socio-economic (SE) groups. (32) An Irish study described mortality in Ireland over a 10-year period. It concluded that respiratory disease was one of the main causes of death with mortality rate in the lowest occupational class 200% higher than the rate in the highest occupational class. (33) More recent data for the period 2007-2012, shows a difference in COPD mortality in the order of 303% in lower SE groups compared with upper SE groups for males aged 15+ years. For the age group, 15-64 years, the excess is even higher at 366%. In other words, deaths from COPD in the period 2007-2012 were three times higher in the lower SE group compared with the higher SE group, implying a much greater mortality for lower SE groups from COPD. (27) Such data show that the greatest burden in terms of COPD mortality is borne by those in the lower SE groups.

2.2.4 Burden on health services plus wider economic and social burden of COPD

Associated with the disease burden of COPD outlined in the previous section, is a significant economic and social cost. The impact of COPD on healthcare facilities is profound, but it also has wider social and economic effects. For the individual patient, COPD is associated with a significant economic burden in terms of the direct medical costs associated with it and also indirect costs including care provided by family members.

2.2.5 Hospital utilisation

Patients with severe disease may suffer frequent exacerbations requiring medical attendance, potential hospitalisation, and profound negative impact on their quality-of-life. Data for admissions to acute public hospitals serve as proxy measures of disease burden especially for those at the more severe end of the COPD spectrum. Of those hospitalised in Ireland with COPD, over 90% have additional co-morbidities while 6.5% require ventilation. (30)

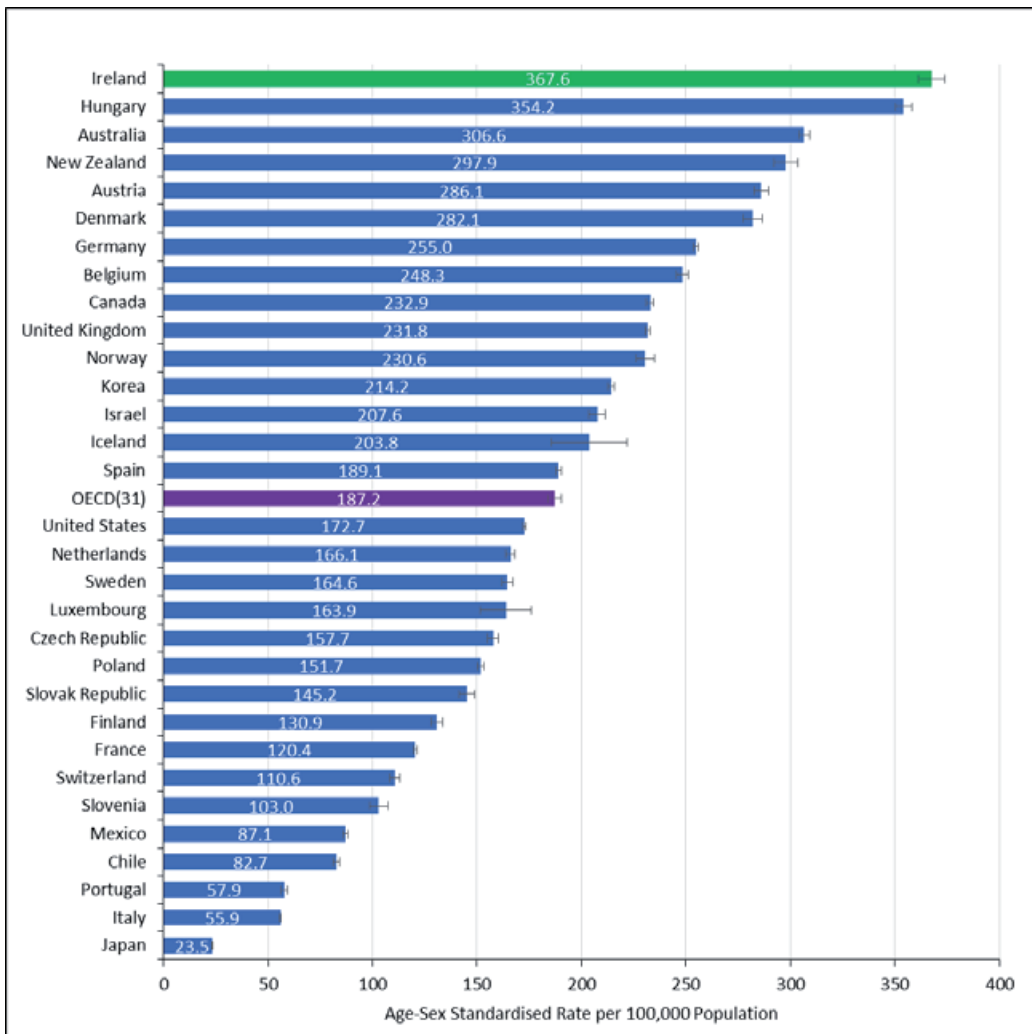


Figure 1: Age-sex standardised hospitalisation rates for COPD per 100,000 population for selected OECD countries, 2015 (or nearest year). (5)

Ireland has the highest rate of hospitalisation for COPD of all OECD countries (Figure 1). In 2015 (the latest year for which OECD data are currently available), the age-standardised hospitalisation rate in Ireland based on OECD age-standardisation equated to 367 per 100,000 population. The national age-sex standardised hospitalisation rate for COPD increased slightly between 2009 and 2018, with 354 per 100,000 population in 2018 compared with 303 hospitalisations per 100,000 population in 2009 (Figure 2). Most countries in the OECD have reported a reduction in hospitalisation rates for COPD over recent years, perhaps as a result of improvements in access to, and the quality of, primary care. As in previous years, the OECD reported that Ireland had the highest age-sex standardised hospitalisation rate for COPD in 2015. While Ireland’s average rate has decreased from 379 hospitalisations per 100,000 population in 2005, to 367 in 2016, the OECD average also declined (214 to 187). In Ireland during the three-year period from 2016-2018, the age-sex standardised hospitalisation rate by county of residence ranged from 242 hospitalisations per 100,000 population in Kerry to 552 hospitalisations per 100,000 population in Offaly (Table 4). (4)

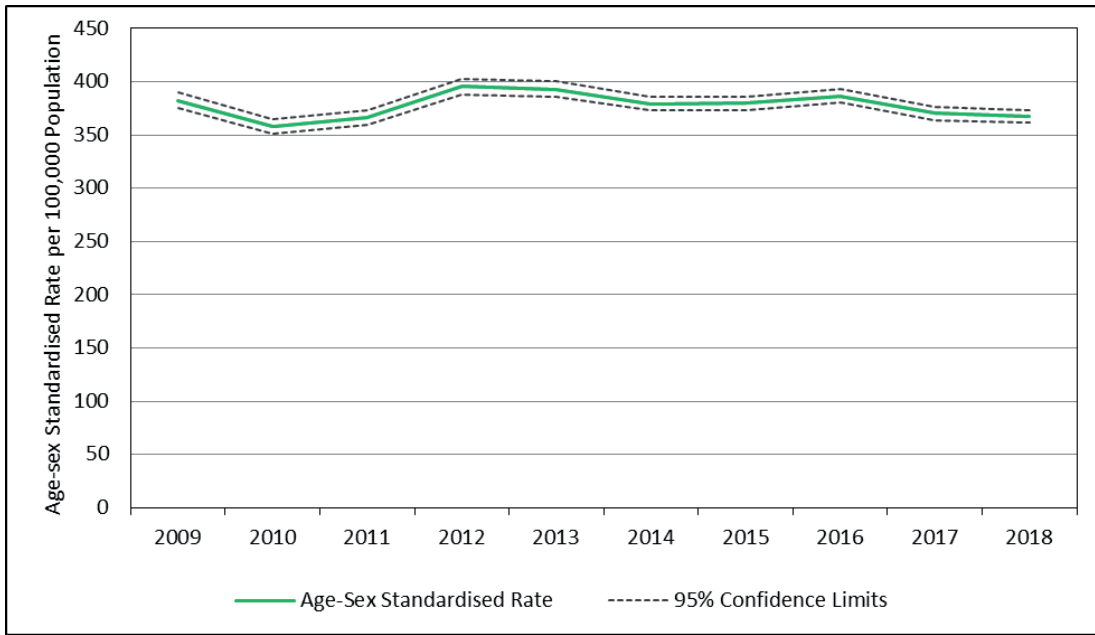


Figure 2: Age-sex standardised hospitalisation rates for COPD per 100,000 population in Ireland, 2009 – 2018. (5)

This discrepancy may be due in part, to differences in how countries code their hospitalisation data; Ireland uses the ICD-10-AM/ACHI coding system and other countries that use this system were also above the OECD average, suggesting that deriving inference from comparisons across the OECD as a whole may be inappropriate. This caveat notwithstanding however, it is difficult to propose differences in coding alone as the explanation as to why hospitalisation rates in Ireland are the highest among all of the countries listed.

The hospitalisation rate figures for episodes of care for patients with a diagnosis of COPD from adult acute public hospitals are shown in Table 5. Also presented are the numbers of inpatient bed days used (BDU) and mean and median length of stay (LOS) over this time period. Across acute hospitals in 2017, COPD accounted for 3.9% of all discharges and 4.4% of all bed days used (in adults aged 35 years and older) (Table 5).

In addition to the 15,127 discharges with a primary diagnosis of COPD from these hospitals, there were a further 14,514 episodes of care where COPD was recorded as a secondary diagnosis suggesting that for 7.6% of inpatient discharges (in adults aged 35 years and older) in adult acute hospitals, COPD was a factor. Episodes of care with a primary or secondary diagnosis of COPD accounted for almost 12% of in-patient bed days in adult acute hospitals in Ireland in 2016, again amongst adults aged 35 years and older (see Table 6). Day case activity for COPD was considerably lower: - 1,914 episodes in 2016 across all hospitals reporting to HIPE.

Table 4: COPD Hospital Rates per 100,000 Population by County of Residence, 2016 – 2018.(5)

County of Residence	Number of Cases	Age-Sex Standardised Admission Rate	Lower 95% Confidence Limit for Admission Rate	Upper 95% Confidence Limit for Admission Rate
Carlow	622	495.0	456.1	533.9
Cavan	660	376.3	347.5	405.2
Clare	762	264.3	245.5	283.2
Cork	3,956	313.7	303.9	323.4
Donegal	2,013	488.4	467.1	509.7
Dublin	11,341	401.5	394.1	408.9
Galway	1,949	338.3	323.3	353.4
Kerry	890	224.6	209.7	239.4
Kildare	1,452	381.7	361.5	401.8
Kilkenny	776	327.0	304.0	350.0
Laois	815	506.5	471.2	541.9
Leitrim	268	289.9	255.0	324.8
Limerick	1,769	384.0	366.1	401.9
Longford	423	439.3	397.4	481.2
Louth	1,159	418.2	394.1	442.3
Mayo	1,346	363.5	344.1	383.0
Meath	1,220	338.7	319.5	358.0
Monaghan	412	282.4	255.1	309.6
Offaly	975	552.8	518.1	587.6
Roscommon	758	407.0	378.0	436.0
Sligo	706	405.9	376.0	435.7
Tipperary	1,745	419.1	399.4	438.7
Waterford	826	292.2	272.2	312.1
Westmeath	1,005	520.2	488.0	552.4
Wexford	1,713	463.3	441.3	485.2
Wicklow	883	274.7	256.4	293.0
National	40,444	375.7	372.1	379.4

Table 5: In-patient discharges with a primary diagnosis of COPD in adult acute public hospitals, 2009-2017 (adults aged 35 years and older). (34)

Year	Discharges COPD*	% of all in-patient discharges	Rate/100,000 population	Bed days used & COPD*	% of all in patient bed days used	Mean & LOS (SD)	Median & LOS (IQR)
2009	11,026	3.6%	507	102,907	4.1%	9.3 (13.5)	6 (3-10)
2010	10,615	3.5%	478	98,718	4.0%	9.3 (15.4)	6 (3-10)
2011	11,364	3.7%	500	99,269	4.1%	8.7 (13.2)	6 (3-10)
2012	13,059	3.9%	567	105,132	4.3%	8.0 (13.2)	5 (3-9)
2013	13,830	4.0%	590	109,048	4.4%	7.8 (13.5)	5 (2-9)
2014	14,140	3.9%	591	111,349	4.4%	7.8 (11.7)	5 (2-9)
2015	14,489	4.0%	592	115,593	4.4%	7.9 (12.1)	5 (2-9)
2016	15,460	4.1%	614	119,787	4.5%	7.7 (11.8)	5 (2-9)
2017	15,127	3.9%	591	119,845	4.4%	7.8 (12.7)	5 (2-9)

Table 6: In-patient discharges with a primary or secondary diagnosis of COPD in adult acute public hospitals, 2009-2017 (adults aged 35 years and older). (34)

Year	Discharges COPD*	% of all in-patient discharges	Rate/100,000 population	Bed days used & COPD*	% of all in patient bed days used
2009	22,445	7.2%	1033	268,947	10.8%
2010	23,422	7.6%	1056	282,243	11.5%
2011	24,218	7.9%	1065	279,596	11.7%
2012	26,876	7.9%	1167	283,969	11.5%
2013	27,924	8.0%	1191	290,307	11.8%
2014	28,007	7.8%	1171	291,325	11.5%
2015	28,133	7.7%	1150	307,555	11.7%
2016	29,780	7.8%	1182	317,993	11.9%
2017	29,641	7.6%	1158	317,075	11.6%

Putting respiratory in-patient admissions in context, in 2016, lung disease (including cancer of the trachea, bronchus and the lung) accounted for 14.0% of all admissions to Irish hospitals (across all categories and age groups) and 15.8% of bed days used. COPD, pneumonia, and other acute lower respiratory tract infections (LRTIs) (as primary diagnoses) were collectively responsible for 7.0% of in-patient admissions and 9.7% of bed days used in 2016 (Figure 3). (35)

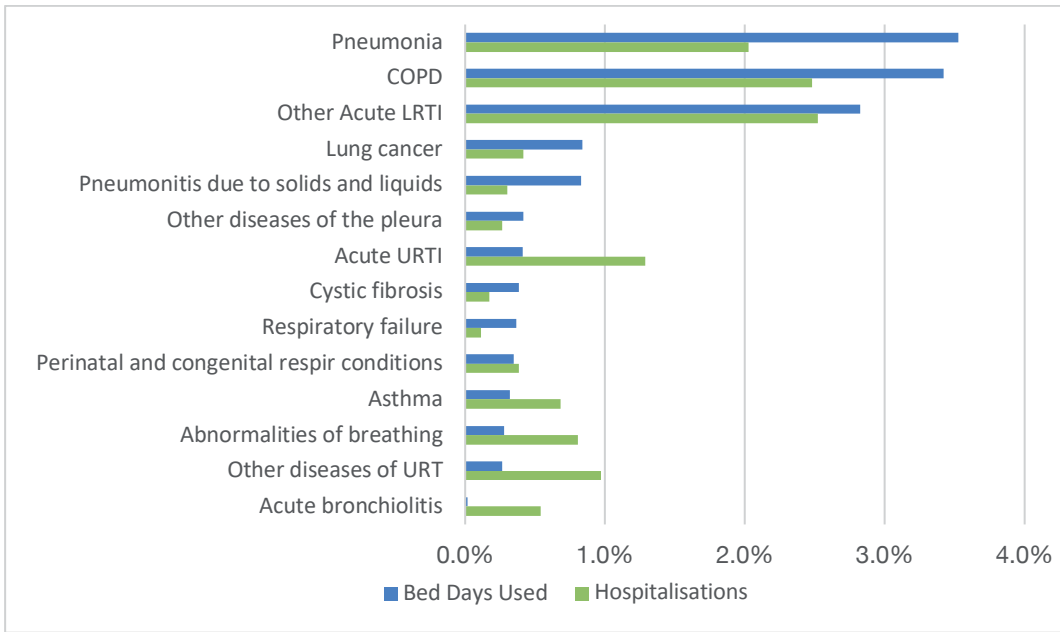


Figure 3: Percentage of in-patient hospitalisations and bed days used by respiratory conditions. (Denominator is all in-patient admissions discharged from all hospitals reporting data to HIPE (all ages)). (35)

An analysis of discharges following emergency admission from Irish hospitals in 2016 reveals that 19% of in-patient emergency admissions (across all ages) were due to lung disease and related cancers (as defined above) and that these admissions were responsible for 20% of bed days used by all emergency admissions to hospital. COPD, pneumonia, and other acute LRTIs (again as primary diagnoses) were collectively responsible for 10.5% of emergency in-patient admissions and 13.7% of bed days used (Figure 4). (35)

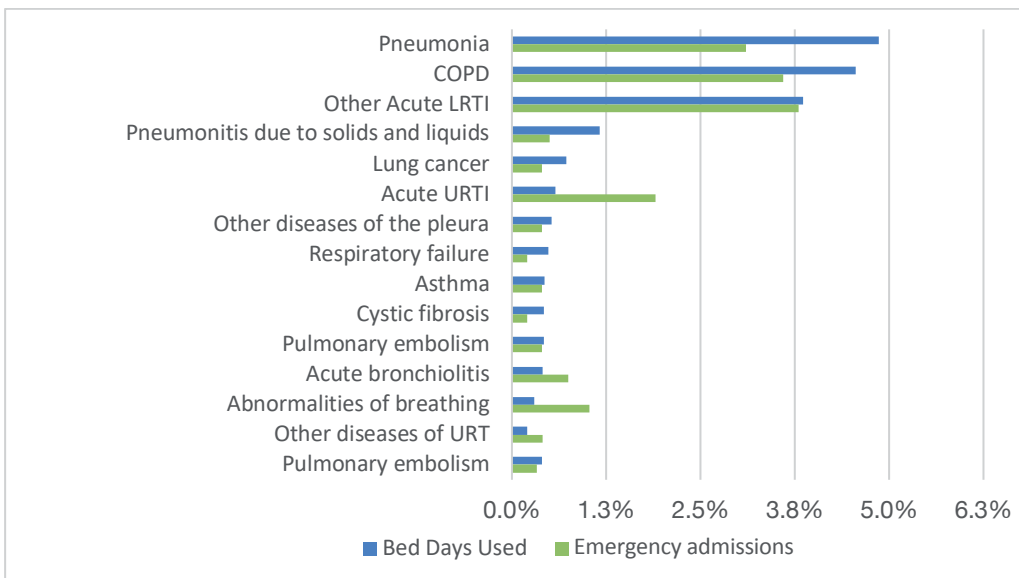


Figure 4: Percentage of emergency admissions and bed days used by respiratory conditions, 2016. (34)

2.2.6 Age specific trends in hospitalisation

Hospitalisations for COPD clearly increase with age. In 2016, across all age categories there were almost 16,000 in-patient discharges with a primary diagnosis of COPD, with higher numbers seen in those over 60 years. Putting this in context of all hospital in-patient activity, 6.5% of in-patient activity (across all hospitals reporting data to HIPE) was for episodes with a primary diagnosis of COPD in the 65 to 74-year age bracket, and 5.4% in those aged 75 years and over (Figures 5&6). (35)

When activity is analysed by grouping patients with a primary diagnosis of COPD, pneumonia or other acute LRTI, in a manner commonly utilized for such analysis in the UK, there were over 45,000 in-patient discharges with a primary diagnosis of COPD, pneumonia or other acute LRTI in Ireland in 2016. The number of discharges was again highest in older age groups (Figure 6). (36) 12.5% of all in-patient hospital episodes in those aged 65 to 74 years had a primary diagnosis of COPD, pneumonia or other acute LRTI. This figure rises to 15.4% in those aged 75 years and above (Figure 6). (35)

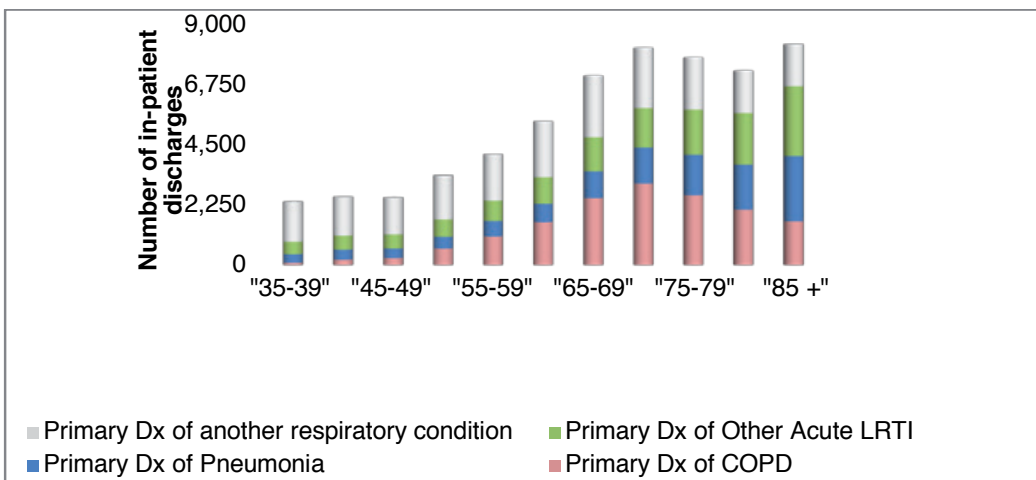


Figure 5: In-patient respiratory discharges, and discharges with a primary diagnosis of COPD, pneumonia or other acute respiratory tract infection (LRTI), 2016. (34)

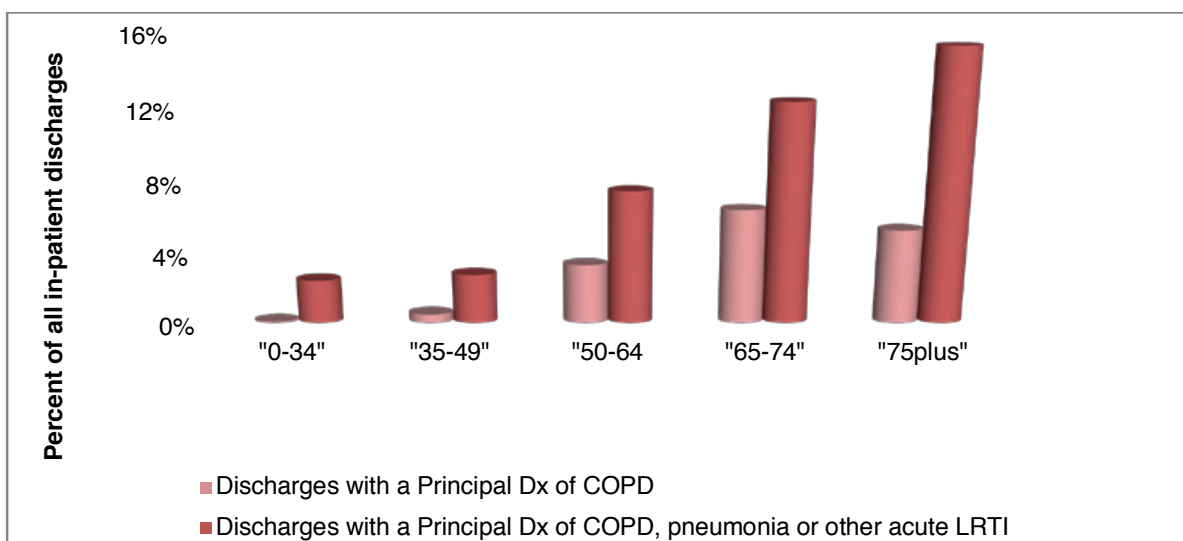


Figure 6: Proportion of in-patient discharges with a primary diagnosis of COPD or a primary diagnosis of COPD/pneumonia/other acute LRTI 2016. (34)

2.2.7 Spend on pharmaceuticals

In Ireland government reimbursement for respiratory medications is recorded for both General Medical Services (GMS) and Drugs Payment Scheme (DPS). In 2016 in the GMS population this totalled €113.7 million (11% of the GMS budget) and €10.7 million (12% of the DPS budget). Of that, expenditure on medications prescribed for COPD (R03AK - adrenergic in combination with corticosteroids or other drugs for obstructive airway disease airway, and R03BB - anticholinergic, and R03AL-adrenergics in combination with anticholinergic) accounted for approximately €67.6 million of the total €113.7 million in the GMS population. (37)

These costs do not include additional drugs such as antibiotics, steroids, LTOT, supply of nebulisers, vaccines etc. or the supply of medication in hospitals. Neither do they account for the out-of-pocket costs to patients who pay privately for their medication (i.e., those not eligible for a GMS card, or whose monthly medication costs fall below the €144 threshold). Hence, it is highly probable that these figures grossly underestimate overall spending on pharmaceuticals for the management of COPD in Ireland.

2.3 Rationale for this National Clinical Guideline

This document describes the Model for the NCP for Respiratory, following international best practice to be delivered within an integrated service approach. It covers the full spectrum of care provided in hospitals and in the community.

The Model for COPD outlined in this document details how physicians, nurses, physiotherapists and other HCPs will work with patients to make the clinical decisions most appropriate to a patient's circumstances. It is envisaged that this will facilitate self-management by patients at home through their empowerment and by promoting collaboration with and between specialist HCPs in providing optimal care.

2.3.1 Improving outcomes for people with COPD

COPD is a major cause of morbidity and mortality for patients in Ireland. At least 1500 patients die of this disease and over 15,000 patients are admitted to Irish hospitals with COPD every year. It has a profound effect on patients but also represents a significant strain on the health service. Furthermore, across the healthcare service there is considerable variability in the delivery of care for COPD, including variation in length of stay between various hospitals and access to Pulmonary Rehabilitation and COPD Outreach services.

There are many possible explanations as to why issues pertaining to COPD management have not received the attention they merit. There is often confusion about the name of the condition itself, with patients frequently being told that they have asthma or the often-interchangeable use of the terms emphysema, COPD, and chronic bronchitis. The disease generally progresses slowly with the result that symptoms usually appear gradually as opposed to the clinical course of other chronic diseases such as ischaemic heart disease and cerebral vascular disease, which often have a sudden onset. Furthermore, there has been a degree of therapeutic nihilism surrounding the disorder, which has led to undue pessimism amongst healthcare providers. This has led to a sense of inertia around developing measures to determine best care for these patients. There may be other social factors at work in that the disease and associated mortality is concentrated in patients from more socio-economic disadvantaged groups. It is well recognised that such groups often experience inadequate healthcare provision. In addition, there may be a degree of prejudice in society towards COPD, with the disease frequently regarded as self-inflicted. This may unfortunately discourage patients from seeking appropriate levels of healthcare. This is often not the case in other chronic diseases despite the presence of overlapping lifestyle related risk factors. In fact, 10% of COPD patients have never been smokers and many patients with COPD have stopped smoking many years previously.

The NCP Respiratory wants Irish society to overcome these attitudes and defines in their MOC the best care that should be delivered to patients with COPD. (1)

The MOC takes a holistic, person-centred and life course approach to the provision of services. It reflects the principles of integrated care which in essence is to provide patients with the right care, at the right time, by the right team, in the right place. It reflects the goals of Healthy Ireland, which are to increase the proportion of people who are healthy at all stages of life, to reduce health inequalities, to protect the public from threats

to health and wellbeing and to create an environment where every individual and sector of society can play their part in achieving a healthy Ireland. The Healthy Ireland Framework sets out a whole of government and whole of society approach to address the determinants of health and wellbeing across the life course. (38)

The NCP Respiratory proposes to change how we deliver care to people with COPD and support a National Model of Integrated Care. Integrated care will be developed with the joint involvement of primary, secondary, and tertiary sectors.

2.4 Aim and objectives

This National Clinical Guideline for COPD has been developed to define the way health services for people with COPD are delivered. This document has been written with the intention of providing assistance to HCPs in all healthcare settings when assessing and managing COPD, by outlining evidence-based treatment protocols. In doing so, it also aims to assist policy makers and those planning services for COPD patients. The document outlines the best practice integrated care and services for a person with, or at risk of developing, COPD as they progress through the stages of their condition. Specifically, the key aims are to:

- Prevent or delay the onset of COPD;
- Improve the delivery of care to people with COPD across all levels of care; and
- Save the lives of people with COPD.

Through the implementation of the End-to-End COPD MOC, the Irish health service will be ensuring that the right care is delivered to people with COPD at the right time and in the right place.

2.4.1 Integrated Model of Care

The MOC for COPD reflects the full spectrum of care and service provided in hospitals and in the community for people with COPD. It is guided by international best practice. The spectrum of services, ranging from primary prevention to tertiary care, within this MOC includes:

- Primary prevention and health promotion;
- Risk factor identification and management;
- Early detection of disease and diagnosis;
- Secondary prevention;
- GP-led primary care management of disease;
- Shared primary and secondary care management of disease;
- Secondary care management of chronic disease; and
- Tertiary care.

The spectrum of services is ideally delivered across four Levels of Service delivery /settings which are (Level 1) General Practice, (Level 2) Specialist Support for General Practice, (Level 3) Specialist Ambulatory Care and (Level 4) Hospital Inpatient Specialist Care. The four levels of service are described in the End-to-End MOC for COPD (2019). (1) The specific interventions considered are included in Section 3 – please see PIPDH tables. This list is not exhaustive in terms of possible interventions for COPD however does consider the interventions included in the scope of this guideline.

2.5 Guideline Scope

The scope of this guideline was based on the PIPOH format: Population, Intervention, Professionals/patients, Outcomes and Healthcare settings and context. Corresponding health questions were used to define the scope of the guideline.

The **population** was defined as diagnosed with COPD (i.e., confirmed as having COPD on spirometry) and over the age of 35 years. For some questions this also included experiencing an acute exacerbation. Gender was male or female.

The **interventions** included five PIPOHs identified by the GDG. These were:

- Pharmacological management of COPD;
- Non-pharmacological management of COPD;
- Management of an acute exacerbation of COPD;
- Oxygen therapy prescription and monitoring in COPD; and
- Pathways, bundles, and checklists for managing an acute COPD exacerbation.

The **providers** included Consultant physicians, GPs, Public health specialists, nurses, nurse prescribers, ambulatory care services, physiotherapists, and pharmacists.

The **outcomes** were stratified into:

- **Patient outcomes** included mortality, decreasing number and severity of exacerbations, hospitalisations, readmissions, morbidity, disease specific quality of life, exercise tolerance and lung function (e.g. FEV1), duration of an exacerbation episode, less hazards to patients due to inappropriate prescriptions of oxygen.
- **System outcomes** included reduction of direct and indirect system costs. Costs related to hospitalisation due to exacerbation, costs for prescription of oxygen, direct and indirect costs related to length of hospital stay and readmissions.
- **Public health outcomes** were mortality and morbidity.

The **Healthcare settings** included other stakeholders such as the HSE, Irish hospitals, primary care, and the Department of Health as well as patient advocacy groups such as COPD Support Ireland.

2.6 Conflict of interest statement

The GDG adhered to the Conflict of interest policy set out by the NCEC. All members of the group completed the required conflict of interest declaration form. No interests stated were deemed to be conflicts in relation to the recommendations of this guideline.

2.7 Sources of funding

The Department of Health funded the literature search. The economic review and the budget impact analysis (BIA) for the guideline were carried out by the Health Research Board Collaboration in Ireland for Clinical Effectiveness Reviews (HRB-CICER). The evidence synthesis team from NUI Galway prepared two reports: (1) Considerations of international clinical guidelines to inform an ADAPTE methodology (Annex A) and (2) a systematic review of settings for delivery of pulmonary rehabilitation for COPD (Annex B).

2.8 Guideline methodology

Many clinical guidelines exist internationally that address the management of COPD, but none are specifically adapted to the Irish context. The NCP for COPD approached the NCEC wishing to prepare a national clinical guideline. The first step involved assembling a GDG from relevant stakeholders including members of the NCP and other groups. The first meeting of the GDG in 2016 established the scope of the guideline and the overall work plans for the project.

It was agreed that the broad focus would be (1) Pharmacological management of COPD (2) Non-pharmacological management of COPD (3) Management of an acute exacerbation of COPD (4) Oxygen therapy prescription and monitoring in COPD and (5) Pathways, bundles, and checklists for managing an acute exacerbation of COPD.

The development of the guideline was supported by evidence synthesis teams from NUI Galway and HRB-CICER.

Step 1: Formulate the key questions.

This process began with the development of priority questions requiring evidence synthesis that the GDG felt were most relevant to the management of COPD in Ireland.

The evidence synthesis team (NUIG) implemented strategies to ensure a shared and clearly articulated scope and question for each review. This began with a scoping search for the review, which was used to explore the likely extent of literature on a particular topic and to guide the development or refinement of the population, intervention, comparison, and outcome (PICO) parameters of the review. The initial scoping search was discussed by NUIG and the GDG and informed decisions on potential review objectives. The evidence synthesis team following this initial discussion, prepared draft objectives, which were shared with the GDG and agreement sought.

The GDG and NUIG developed a shared understanding of the scope, timeframe, and deliverables for each review question. Once this was agreed, a protocol for each review was developed. The NUIG formulated five key health questions during their review of international guidelines. The five “health questions” are presented in Table 7 with the full questions defined using the PIPOH framework in Annex A.

Table 7: Five health questions formulated during review by NUIG

Question 1	What pharmacological interventions (LABAs, LAMAs, ICSs, macrolide antibiotics and PDE-4 inhibitors) are effective at reducing mortality and morbidity in patients over 35 years of age with COPD?
Question 2	What non-pharmacological agents (such as pulmonary rehabilitation, oxygen therapy, smoking cessation and vaccinations) are effective at reducing mortality and morbidity in patients over 35 years of age with COPD?
Question 3	What interventions (nebulised bronchodilators, steroids, antibiotics, chest physiotherapy) are effective at reducing mortality and morbidity in patients over 35 years of age with exacerbations of COPD?
Question 4	What is the appropriate prescription of oxygen therapy effective to reduce mortality and morbidity for patients over 35 years of age with COPD, and what are the optimal monitoring strategies and assessment frequency for patients receiving oxygen therapy?
Question 5	In patients admitted to hospital with an acute exacerbation of COPD, which clinical pathways, admission and discharge bundles or checklists are most effective at improving patient care by reducing length of hospital stay and readmissions and by reducing patient mortality and morbidity?

Step 2 Search methodology

In developing a national clinical guideline for Ireland, the GDG decided to adapt existing guidelines using the ADAPTE process. The Evidence Synthesis Centre conducted three parts of the ADAPTE process: (1) Assisting the GDG in defining the scope and purpose of the guideline; (2) Conducting a systematic search for existing guidelines; and (3) Performing an assessment of the quality of included guidelines overview. See Annex A.

A comprehensive search was performed to identify relevant guidelines. This included searches in PubMed, Embase, CINAHL and DynaMed databases, as well as grey literature sources including guideline clearing houses and national websites, professional bodies' websites and Google. Searches were limited to guidelines published in English in the last 10 years. Due to the large number of guidelines meeting the inclusion criteria, a second round of screening was conducted to reduce the number of guidelines to be made available to the GDG. This was based on the "Rigour of Development" dimension of the AGREE II quality assessment tool, as recommended in the ADAPTE manual. (39) The Rigour of Development dimension contains eight items. Guidelines were included only if they met all items 1-6. Specific PIPOHs were identified for each set of questions the GDG wished to address through the ADAPTE process, These PIPOHs (n=5) relate to (1) the pharmacological and (2) non-pharmacological management of COPD, (3) the management of acute exacerbations of COPD, (4) the use and monitoring of oxygen therapy, and (5) the use of checklists, bundles, and pathways in the care of patients with acute exacerbations of COPD.

Once the draft clinical recommendations were formulated, HRB-CICER conducted a systematic review of cost-effectiveness. The full report is presented in Annex C.

In summary, 10 review questions were developed in line with the PICOS framework (Appendix 4). A systematic search for studies published since 2008 was performed in Medline, Embase and grey literature sources. Screening, data extraction and critical appraisal were performed independently by two reviewers with any conflicts resolved through discussion. Assessment of quality and applicability of the international studies was conducted using the CHEC-list and ISPOR tools, respectively. Due to the heterogeneity of economic studies, the evidence was synthesised narratively. Further search methodology can be found in Appendix 2.

Step 3: Screen and appraise the evidence.

Records were screened by two reviewers independently and a third reviewer resolved any conflicts. The quality of guidelines was assessed by two independent reviewers using the AGREE II tool and average percentage scores were calculated for each of the seven domains. The findings of the quality assessment of the 17 included guidelines are presented in Appendix 3. The average percentage score for each domain of the AGREE II tool and the average overall percentage score judgment is also provided. If a procedure to update the guideline was provided, then this item (item 14) of the rigour domain was judged satisfactory in accordance with the AGREE II manual, even if no recent version of the guideline had been published. Hence, it was recommended to look at the date of publication of the guidelines as well as their rating. Overall AGREE II scores ranged from 64.3% to 100%, and the applicability domain scored the lowest most frequently. The NICE guideline scored the highest in all domains and overall. However, certain guidelines with a more narrow scope that answered a specific PIPOH also scored high in quality; for example the British Thoracic Society's guidelines on pulmonary rehabilitation, home oxygen, and emergency oxygen. Thus, our recommendations are primarily based on the recommendations from the high-quality existing guidelines. For details of which guideline informed each key question, please refer to individual guideline. The relevant recommendations within these guidelines were mainly adapted rather than adopted, as indicated in the relevant sections, and related evidence tables.

Step 4: Developing and grading the recommendations.

The GDG used the “ADAPTE Process Workbook” to guide the process. This also involved looking at different processes including the ADAPTE process, developing subgroups, draft recommendations, permissions, response tracker and guidelines relevant to the PIPOHs. Meetings continued which included using the ADAPTE tool kit and Process workbook which was an excel style workbook and included sections on lists of guidelines, tool matrix, search and selection tool, validity, applicability, and tool application for each PIPOH.

The synthesised information was made available to the GDG with an emphasis on concise narrative and the use of evidence profiles. The GDG then provided feedback to the evidence synthesis team on the information synthesised. The GDG used this information to generate recommendations from the evidence. This involved meetings for discussions about which recommendations from existing guidelines to adopt and/or adapt where pre-meeting emailed feedback from GDG members was collated to guide the discussions.

Once the recommendations were developed, each recommendation went through a process of approval by the GDG. This process was called “Acceptability and Application” of recommendations. Each recommendation was sent to each GDG member via a web link which graded the recommendations. The grading included “recommendation is acceptable” and the “recommendation is applicable to patients in the context of use”. Recommendations were finalised based on consensus responses.

Some recommendations were adapted from guidelines, primarily GOLD and the US Department of Veteran Affairs document on the management of COPD. In cases where no recommendations were suitable or available, expert opinion from the GDG group was used. The process for this included the group of experts working using a nominal group technique to brainstorm and talk through and agree the important issues. The system reviews were used to assist and support these sessions. Each recommendation was assigned a grade for quality of evidence and strength of recommendation as per Appendix 5. The quality of evidence grade reflected the overall level of evidence upon which the recommendation was based, including the directness of the evidence to the clinical question, and whether further research was felt likely to change the recommendation. The strength of recommendation was primarily based on the quality of evidence.

Finally, Good Practice Points were developed by the GDG to provide guidance on important aspects of COPD management that had little existing evidence base but were agreed by GDG consensus.

The draft guideline was progressed through GDG sub-group meetings in May to July 2020. Members were asked to verify if any key documents, resources, bodies, or organisations had been omitted. Once the GDG agreed the final recommendations and supporting text, the guideline document was forwarded to two expert reviewers for consultation and was sent for national stakeholder review in July 2020 (Appendix 6: Consultation report).

2.9 Consultation summary

The COPD GDG ensured that all stakeholders had an opportunity to contribute to the revision of the COPD national clinical guideline through a public consultation process.

The final draft of NCG COPD (2020) was circulated to the following for review and feedback:

- Group Directors and Directors of Nursing all Hospital Groups and all acute hospitals.
- Clinical Directors Hospital Groups and acute hospitals, Hospital/Group Chief Executive Officers, and General Managers ONMSD and all NMPDUs/CNMEs.
- NCP Clinical Leads.
- Chief Clinical Officer, HSE.
- Nursing and Midwifery Board of Ireland (NMBI).
- Schools of Nursing and Midwifery, HEIs, Ireland.
- Colleges of Medicine, HEIs, Ireland.

- Patient groups- COPD Support Ireland, Irish Patient's Association.
- Regulatory bodies.
- Department of Health.
- Chief Nursing Officer office, DOH.
- HSE Quality Improvement Division.
- National Quality Assurance and Verification Division.
- HSE Quality and Patient Safety.
- Acute Hospitals Division Office of the Nursing and Midwifery Services.
- Hospital Group Clinical Directors.
- Hospital Groups Chief Director of Nursing and Midwifery.
- Hospital Directors of Nursing.
- Acute Division Hospital Chief Executive Officers and General Managers.
- Acute Division Hospital Clinical Directors.
- Acute Division National Director for Clinical Strategy and Programmes Division.
- Nurse Leads, Clinical Strategy and Programmes Division.
- Clinical Leads, Clinical Strategy and Programmes Division.
- Programme Managers, Clinical Strategy and Programmes Division.
- Directorate National Clinical Advisor and Group Lead for Acute Hospitals.
- HSE National Director of Acute Hospitals.
- HSE Deputy National Director of Acute Hospitals.
- Hospital Group Directors of Nursing.
- Hospital Group Chief Executive Officers.
- National Women and Infants Health Programme.
- National Ambulance Service.
- Pre-Hospital Emergency Care Council (PHECC).
- Health Protection Surveillance Centre.
- HSE Microbiology.

2.10 External review

International external review of the revised COPD guideline was completed by two experts in their respective fields:

1. Professor Stephen Bourke, Consultant Respiratory Physician for Northumbria Healthcare NHS Foundation Trust, and Honorary Professor of Respiratory Medicine, Newcastle University.
2. Professor Fernando J Martinez, Chief of the Division of Pulmonary and Critical Care Medicine at Weill Cornell Medicine in New York City.

Biographical details available in Appendix 1.

Professor Stephen Bourke and Professor Fernando J Martinez are recognised internationally as experts in respiratory medicine and in particular COPD. The COPD GDG is very grateful to these reviewers and appreciates the time, commitment and expertise that was involved in their review. Reviewers were asked to consider the guideline in accordance with the questions recommended by the National Quality Assurance Criteria for Clinical Guidelines Version 2. External reviewers were also asked to provide any additional feedback they felt was relevant. All feedback was reviewed and informed the final revised guideline.

2.11 Implementation

A comprehensive implementation plan for this guideline is outlined in Appendix 7. Each hospital's senior management team and primary care General Manager in conjunction with the designated local implementation leads should review NCEC NCG No. 27 COPD (2021), to appropriately plan implementation and recognise the system-wide implications.

It is recommended that teams use Quality Improvement (QI) methodology when implementing recommendations. Such methods enhance stakeholder engagement, empowerment, and adoption through the use of testing, measurement, and feedback on key interventions. The plan advocates for the establishment of local governance groups to direct on-going implementation and evaluation of the guidelines. Governance groups should be multidisciplinary, have a designated senior clinical lead and senior management sponsorship. There should be designated local COPD coordinators within the membership of the governance group to coordinate implementation, education, and evaluation, inclusive of audit. The governance group should regularly report directly to the senior management team and should actively engage with the quality and risk governance structures. Patient representation should be strongly considered on these governance groups, with patient outcomes aligned to the effective management of COPD.

Some of the potential enablers and barriers for implementation of COPD are listed in Table 8. Local issues should be identified, and action plans initiated to manage improvement at a local hospital level. Hospital Groups may consider the use of a QI collaborative style approach.

Table 8: Summary of enablers and barriers to the implementation of recommendations (2021)

Enablers	Barriers
<ul style="list-style-type: none"> • Stakeholder engagement. • Clinical champion(s) and good local leadership. • Clearly defined roles and responsibilities. • Effective governance with direct reporting to senior management teams. • Effective multidisciplinary teamwork. • Effective communication pathways. • Ongoing targeted education and training and reinforcement of learning. • Regular audit and evaluation with the results informing QI work. • Patient/family/carer engagement and coproduction of improvements. • Support groups and helplines. • MOC for COPD. • CPD. 	<ul style="list-style-type: none"> • Staff familiarity with current COPD MOC and resistance to change of practice. • Absence of clearly defined roles and responsibilities. • Ill-defined or inappropriate governance arrangements. • Lack of adequate resources e.g., staff, equipment, audit, time designated to provide clinical leadership. • Inadequate communication systems lacking in clarity, standardisation, accountability. • Inadequate access to education, lack of development of appropriate skill set required integrated care. • Inadequate audit and evaluation schedule and resources. Lack of adequate systems to support audit e.g. ICT, data and analytics expertise. • Resistance to patient/family/carer involvement with audit, evaluation, improvement.

Barriers to implementation should be identified and addressed as part of the organisational QI and patient safety agenda. Attention to the enablers listed above and in the implementation plan in Appendix 7 will provide guidance to local sites and Hospital Groups for service planning, development, and implementation.

For full implementation of this guideline, it is essential that all HCPs responsible for the care of COPD patients understand their responsibility, accountability, and authority for improving care. Improvement should occur in all phases to include anticipation, recognition, escalation, response, assessment, intervention, reassessment, evaluation, education, and governance. This must be supported by clear lines of accountability, which include systems that can detect, and correct lapses in appropriate, reliable safe care in a timely basis.

Funding for COPD implementation and improvement is subject to service planning and the estimates process (full BIA report available in Annex D).

Senior Manager Responsibilities:

- Agree and provide a local governance structure to support the implementation, on-going audit and evaluation of patient outcomes pertaining to the recommendations of the NCEC NCG No. 27 COPD (2021).
- Assign personnel with delegated responsibility, accountability, authority, and autonomy to implement and evaluate the NCEC NCG No. 27 COPD (2021). Provide documented clear roles and responsibilities for staff.
- Provide managers and clinician leads with support to implement the NCEC NCG No. 27 COPD (2021) and ensure clinical staff has access to and undertake education and training as appropriate to the successful implementation and evaluation of COPD.
- Ensure local policies, protocols and procedures are in place to support implementation and are regularly adapted based on new learning, evolving evidence and as a result of QI work.
- Seek regular reports on implementation and evaluation of COPD from the COPD governance group and provide direction on subsequent action plans.
- Enable and support implementation coordinators and the governance group by providing a direct link to corporate governance team/senior management team.
- Plan for the procurement and implementation of digital technologies through the estimates and service planning processes to support implementation and evaluation of NCEC NCG No. 27 COPD (2021).

Clinician responsibilities:

- Ensure familiarity with and compliance with the NCEC NCG No. 27 COPD (2021) and related policies, protocols, and procedures.
- Adhere to the relevant code of professional conduct and scope of professional practice appropriate to the role and responsibilities.
- Develop and maintain relevant competencies in the management of COPD.
- Be aware of the role of clinical judgment, anticipatory care, and delegation, in using the NCEC NCG No. 27 COPD (2021).
- Seek to provide clinical leadership, mentorship of staff and on-going education of the multidisciplinary team.
- Advocate on behalf of patients and staff to hospital senior management for the robust development of systems and service improvement to support implementation, improvement, and evaluation of NCEC NCG No. 27 COPD (2021).
- Create and lead engagement with patients, families, and carers to help better inform QI initiatives for COPD.
- Participate in relevant education programmes and contribute to education and training programme development.
- Advocate for and use digital technologies to support implementation and evaluation of NCEC NCG No. 27 COPD (2021).
- Promote and engage in research to improve COPD.
- Assist with the performance of clinical and healthcare audits associated with COPD.

Tools provided as supports for the implementation of NCEC NCG No. 27 COPD (2021)

- HSE End to End MOC for COPD 2020.
- Implementation guidance is included in detail in Appendix 7.
- Implementation guide for pulmonary rehabilitation.
- Implementation guide for COPD Outreach services.
- Bundles of care.

2.12 Monitoring and audit**2.12.1 Monitoring and evaluation**

The key implementation process outcomes for this guideline overall, and for specific recommendations, are listed in the logic model and the implementation table in Appendix 7. A key focus of monitoring and evaluation will be the implementation of recommendations. Thus, the Implementation Team will monitor the degree to which the guideline is disseminated and available for use in all clinical areas involved in the delivery of care to people with COPD. The aim is to ensure awareness, understanding, acceptance and adoption of the guideline, in both acute and community settings, among doctors, nurses, pharmacists, and health and social care professionals. Data will be used for improvement and QI methods to assist in determining effectiveness of implementation of key areas of the guideline.

This needs to be monitored during implementation through a combination of methods, to allow the implementation process to be adapted and tailored according to the needs of certain settings/groups. One example is the recent RCPI COPD collaborative focused on respiratory specialist review, compliance with an admission clinical bundle, use of DECAF for clinical risk stratification and compliance with discharge processes. (40) Among the many benefits observed was a reduction in length of stay (median) by 1.75 days.

The key service outcome for this guideline is a more integrated service with care across the continuum of healthcare delivery settings. The key patient-related outcomes of successful implementation of this guideline are improvements in patient safety, decreased mortality and morbidity (including that associated with inappropriate prescribing of medications) and improvements in access to services.

Monitoring, evaluation, and audit are an important part of the implementation of this initiative. Regular audit is required to support implementation of the recommendations within this revised NCG. It is recommended that the audit process is coordinated locally by the MDT in each area by the local committee, as per the NCEC NCG No 27 COPD (2021) recommendations. It is recommended that the audit process is undertaken from a multidisciplinary perspective where feasible and appropriate. In planning the audits to be undertaken, consideration should be given to the frequency of the audits and competencies required to conduct, interpret, and compile the final report and recommendations.

2.12.2 COPD audit datasets

Datasets currently exist for COPD Outreach and Respiratory Integrated services including Pulmonary Rehabilitation and are submitted to the NCP Respiratory and the Business Intelligence Units.

2.12.3 Smoking cessation

The new patient management system for stop smoking services, QUIT Manager will be launching a new referral module before year end which will facilitate direct referrals into the service from identified key referrers. As per recommendation 11, stop smoking services would be able to report on the number of referrals from COPD services to enable and support the monitoring and audit of this guideline.

2.12.4 Process measures

For process audits the recommended standard required is 100% compliance. Where the compliance is less than 80% it is proposed that local action plans are put in place.

2.12.5 Outcome measures

The following suggested outcome measures are based on international best practice and should be included in the planned audit cycle.

- Patient outcome measures e.g., Hospital length of stay (HLOS), mortality rates, and readmission rates.

2.12.6 Education/Training audit

- Audit of COPD education/training and evaluation record. See Appendix 8 for Sample Audit Tool
- Database of staff trained - each hospital to make their own local arrangement to best meet their needs.

2.12.7 Key Performance Indicators (KPIs)

COPD implementation is supported by National KPIs, which are reported quarterly to the Acute Business Information Unit (BIU), HSE.

2.12.8 Audit results

The audit results and reports should be discussed at the appropriate COPD governance group and the findings delivered upwards to the Hospital Clinical Governance Committee/ Hospital Senior Management Team and thereafter to all levels of staff. The hospital's healthcare audit/clinical audit cycle as part of the continuous QI process should inform the audit plan.

Results and learning points can be used in the on-going education delivered by the designated COPD Coordinator and in the local QI initiatives.

2.12.9 Additional databases

National Quality Assurance and Improvement System (NQAIS) Clinical is an online interactive application that analyses hospitals' HIPE data and can provide detailed feedback to clinicians and managers. Hospitals can explore NQAIS Clinical to look at patient outcomes, for example, cardiopulmonary arrest and ICU length of stay. Further details on monitoring and audit can be found in Appendix 10.

2.13 Plan to update this National Clinical Guideline

The COPD GDG agreed that the COPD guideline should be reviewed on a three-yearly basis and updated in line with NCEC procedures. As a result, NCG No. 27 (COPD) (2021) will require updating in 2024 by the GDG.

3**Appendices**

Only appendices 7 and 9 are presented here as they are key to interpretation of the recommendations in this summary guideline.

Refer to the full guideline report for the remaining appendices:

Appendix 1: Guideline Development Group terms of reference.

Appendix 2: Literature search strategy.

Appendix 3: Guideline search results - AGREE II.

Appendix 4: PICO tables for the healthcare questions.

Appendix 5: Evidence Grading System.

Appendix 6: Consultation report.

Appendix 8: Audit Tool

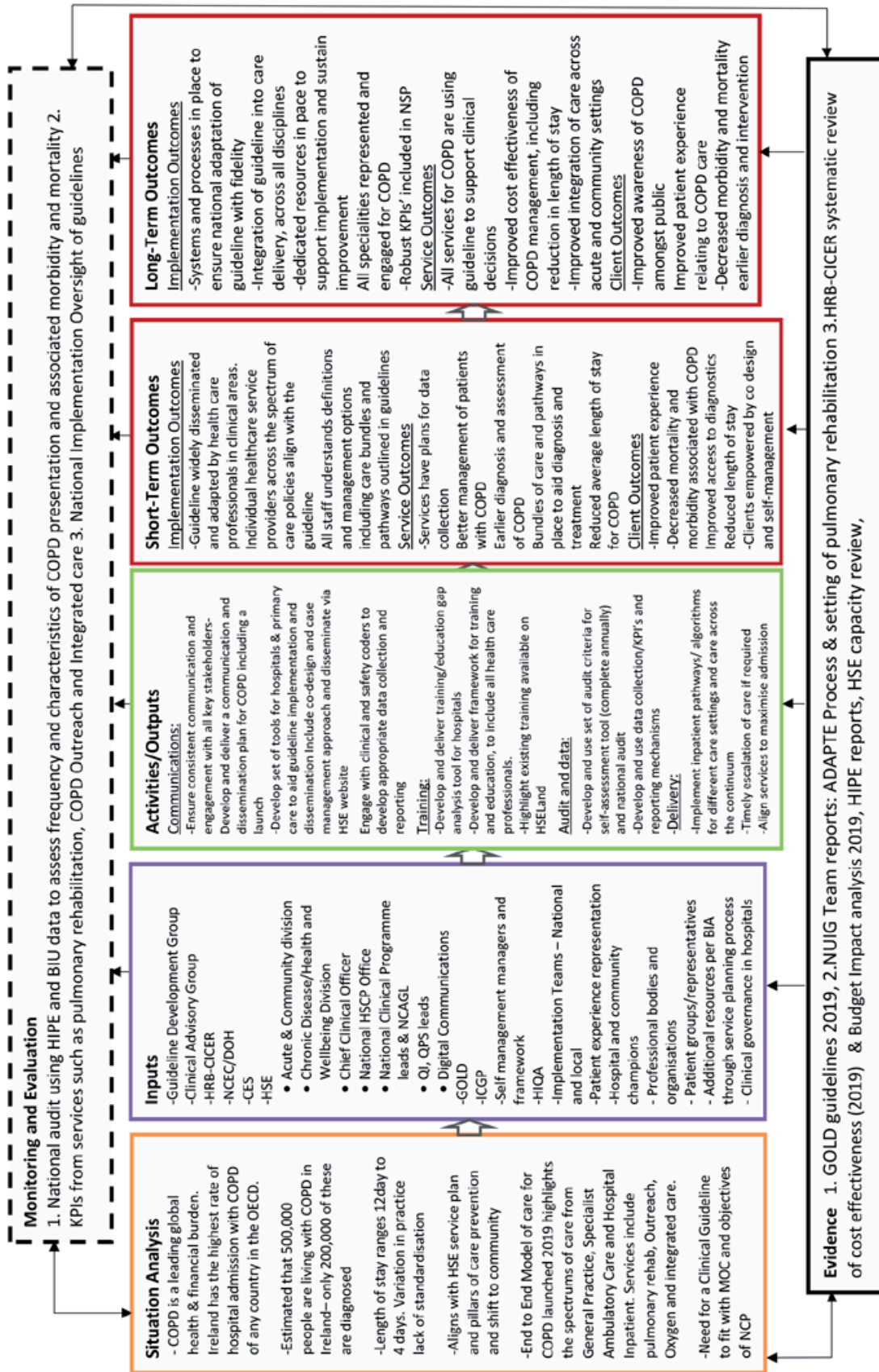
Appendix 10: Monitoring and audit.

Appendix 11: Roles of the multidisciplinary teams.

Appendix 12: Glossary of terms and abbreviations.

Appendix 7: Logic Model & Implementation Plan

Logic Model for National Clinical Guideline: COPD



Implementation Plan for National Clinical Guideline (NCG) on: COPD

Guideline recommendation or number(s)	Implementation barriers / enablers	Action / intervention / task to implement recommendation	Lead responsibility for delivery of the action	Timeframe for completion			Expected outcome and verification
				Year 1	Year 2	Year 3	
Strategy for implementation	<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Champions Building and resourcing CHNs GP contract agreement Specialist teams chronic disease Telehealth <p>Barriers:</p> <ul style="list-style-type: none"> Requires effective change management, resourcing, & clinical leadership 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> <p>Engagement to explore development of clinical champions</p> <p>Seek mandate from COPD programme sponsors for full implementation and resourcing – currently in process with HSE with development of enhanced community care for chronic disease across learning sites and networks</p>	GDG team	X			<p>Outcomes:</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline More promotion and support for guideline implementation Mandate and resources for implementation secured <p>Verification:</p> <ol style="list-style-type: none"> Records of dissemination activities Champion network Budget

Pharmacological Management of COPD					
Recommendation 1	Short acting bronchodilators 1.1 Inhaled short acting beta 2 agonists (SABAs) or short-acting anti-muscarinic (SAMAs) should be prescribed to patients with confirmed COPD where rescue therapy is needed (Grade A) <i>(GOLD)</i>				
	Enablers: <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement Barriers <ul style="list-style-type: none"> • Cost of medication for patients who are not eligible for General Medical Scheme 	Develop and roll-out a communication and dissemination strategy, including public engagement	GDG team Medical Doctors involved in the care of people with COPD Nurse Prescribers	X	Outcomes <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required Verification: <ol style="list-style-type: none"> 1. NCP oversight in place to see implementation and KPIs and audits 2. Records of disseminated activities

<p>Recommendation 2</p> <p>Long acting bronchodilators 2.1 Long acting bronchodilators should be offered to patients with confirmed stable COPD who continue to have respiratory symptoms (e.g. dyspnoea or cough) (Grade A) (GOLD). 2.2 Inhaled long acting muscarinic antagonists (LAMAs) and long acting beta agonists (LABAs) both significantly improve lung function, breathlessness and reduce exacerbations (Grade A) (GOLD). 2.3 LAMAs have a greater impact on exacerbation frequency compared to LABAs (Grade B) (GOLD). 2.4 LABA/LAMA combination therapy has a more profound impact on FEV1 and symptoms than monotherapy (Grade A) (GOLD). 2.5 LAMA/LABA in combination has a greater impact on exacerbation frequency than monotherapy (Grade B) (GOLD).</p>	<table border="1"> <tr> <td data-bbox="443 257 687 770"> <p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement <p>Barriers</p> <ul style="list-style-type: none"> • Cost of medication for patients who are not eligible for General Medical Scheme </td> <td data-bbox="443 770 687 965"> <p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> </td> <td data-bbox="443 965 687 1144"> <ul style="list-style-type: none"> • Medical Doctors involved in the care of people with COPD • Nurse Prescribers • Pharmacists </td> <td data-bbox="443 1144 687 1704"> <p>X</p> </td> <td data-bbox="443 1704 687 2076"> <p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required 3. Local governance in place for implementation <p>Verification:</p> <ol style="list-style-type: none"> 1. NCP oversight in place to see implementation and KPIs 2. Records of disseminated activities communication materials </td> </tr> </table>	<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement <p>Barriers</p> <ul style="list-style-type: none"> • Cost of medication for patients who are not eligible for General Medical Scheme 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> • Medical Doctors involved in the care of people with COPD • Nurse Prescribers • Pharmacists 	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required 3. Local governance in place for implementation <p>Verification:</p> <ol style="list-style-type: none"> 1. NCP oversight in place to see implementation and KPIs 2. Records of disseminated activities communication materials
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement <p>Barriers</p> <ul style="list-style-type: none"> • Cost of medication for patients who are not eligible for General Medical Scheme 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> • Medical Doctors involved in the care of people with COPD • Nurse Prescribers • Pharmacists 	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required 3. Local governance in place for implementation <p>Verification:</p> <ol style="list-style-type: none"> 1. NCP oversight in place to see implementation and KPIs 2. Records of disseminated activities communication materials 		

<p>3</p> <p>Recommendation</p>	<p>Inhaled corticosteroids</p> <p>3.1 Offering an inhaled corticosteroid (ICS) in patients with confirmed stable COPD as first line therapy is not routinely recommended (Grade A) <i>(Department of Veteran Affairs3) (Implied in GOLD)</i>.</p> <p>3.2 Regular treatment with ICS increases the risk of pneumonia especially in those with severe disease (Grade A) (GOLD).</p> <p>3.3 ICS should however be considered in patients with ACOS (Expert Opinion) Guideline Development Group).</p> <p>3.4 Stable state blood eosinophil levels may be used to influence whether or not ICS should be used. Patients with blood eosinophils less than 0.1×10^9 are deemed unlikely to benefit while those with levels greater than 0.3×10^9 are most likely to benefit (Grade B) (GOLD).</p> <p>3.5 An ICS combined with a LABA is more effective than the individual components in improving function and health status and reducing exacerbations in patients with exacerbations and moderate to very severe COPD (Grade A) (GOLD).</p> <p>3.6 Triple inhaled therapy with ICS/LAMA/LABA improves lung function, symptoms and health status and reduces exacerbations compared to ICS/LABA, LAMA/LABA or LAMA monotherapy (Grade A) (GOLD).</p>
<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement <p>Barriers:</p> <ul style="list-style-type: none"> Cost of medication for patients who are not eligible for General Medical Scheme 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>
<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Pharmacists 	<p>X</p>
	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required <p>Verification:</p> <ol style="list-style-type: none"> NCP oversight in place to see implementation and KPIs Improved knowledge and competencies of HCP

<p>Recommendation 4</p>	<p>Inhaler technique 4.1 It is recommended that each patient commenced on an inhaler device would be provided with instructions and a demonstration of proper inhalation technique prior to using the device and that such technique is checked with re-education on a regular basis subsequently. Inhaler technique and adherence to therapy should be assessed before concluding that current therapy is insufficient and a change in therapy considered (Expert Opinion) <i>(Guideline Development Group) (GOLD)</i>.</p>				
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement <p>Provision of consideration to initiatives such as Inhaler Technique Check</p> <ul style="list-style-type: none"> • HSE's Living Well with a Chronic Condition: Framework for Self-Management Support 	<ul style="list-style-type: none"> • Develop and roll-out a communication and dissemination strategy, including public engagement • Provision of access for pharmacists to an inhaler technique education module. • In the acute setting, Respiratory Nurses and Physiotherapists to ensure patients can use their inhaler properly through supervised inhaler use. In the community, Community Pharmacists to demonstrate inhaler technique when a patient is prescribed a new inhaler. Where in place, Respiratory Integrated Care Clinical Nurse Specialists to educate Practice Nurses on how to demonstrate inhaler technique to patients • Create awareness of the availability of inhaler technique videos on COPD Support Ireland website. HSE to consider providing access through HSELand so CPD points can be assigned to healthcare professionals. • Pharmaceutical companies should be encouraged to supply placebo inhaler devices to assist with demonstrations to patients Consider expanding "Inhaler Technique Check" initiative to all hospitals 	<ul style="list-style-type: none"> • HSE • Community Pharmacists • Medical Doctors involved in the care of people with COPD • Respiratory Nurses • Respiratory Physiotherapists • Respiratory Physiologists • Practice Nurses • COPD Support Ireland • Irish Institute of Pharmacy • Pharmaceutical Society of Ireland • Irish Association of Respiratory Scientists • Pharmaceutical companies 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Awareness raising in relation to the role of healthcare professionals in demonstrating and assessing inhaler technique 3. Engage with Irish Institute of Pharmacy on developing inhaler technique module for pharmacists which can be accessed through IOP website. Next steps to be confirmed following engagement. <p>Verification</p> <ol style="list-style-type: none"> 1. Staff training records available for audit 2. Improved knowledge and competencies for HCP

	<ul style="list-style-type: none"> Limited access to placebos in order to demonstrate inhaler technique with patients 							
<p>Recommendation 5</p>	<p>Roflumilast 5.1 In selected patients with the chronic bronchitic phenotype of COPD with severe to very severe air flow obstruction and history of exacerbations, a phosphodiesterase-4 (PDE-4) inhibitor may be reasonable add on therapy with a LAMA and LABA and possibly ICS. Roflumilast is not approved for reimbursement under the community drug schemes (Grade A) (GOLD).</p> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Funding for roflumilast <p>Barriers:</p> <ul style="list-style-type: none"> Access to Roflumilast as not currently reimbursed by HSE <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Engage with HSE stakeholders to discuss possibility of reimbursement for Roflumilast <p>Verification:</p> <ol style="list-style-type: none"> Improved knowledge and competencies for HCP 							

<p>Recommendation 6</p>	<p>Theophylline 6.1 In certain selected patients, the addition of a theophylline may be reasonable (Grade B) (GOLD).</p>				<p>Outcomes 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required</p> <p>Verification: 1. Improved knowledge and competencies for HCP</p>
<p>Recommendation 7</p>	<p>Prophylactic use of macrolide antibiotics 7.1 In patients who have severe COPD with two treated exacerbations, the addition of azithromycin may be considered for one year (Grade A) (GOLD). 7.2 This needs to be done in conjunction with Respiratory Specialist advice with surveillance for bacterial resistance and side effects such as impaired hearing and cardiac arrhythmias. The potential for benefit may be less in active smokers. The use of azithromycin in this manner represents an off-label use of this medicine but is recommended in many guidelines. When considering treatment, patients should be otherwise on optimal therapy (Expert opinion) (Guideline Development Group).</p>				<p>Outcomes 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required</p> <p>Verification 1. Improved knowledge and competencies for HCP</p>
<p>Enablers: • Stakeholder engagement • Patient engagement and involvement</p> <p>Barriers: Nil expected as current practice</p>	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<p>• Medical Doctors involved in the care of people with COPD</p> <p>• Nurse Prescribers</p> <p>• Pharmacists</p>	<p>x</p>		
<p>Enablers: • Stakeholder engagement • Patient engagement and involvement</p> <p>Barriers: Nil expected as current practice</p>	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<p>• Medical Doctors involved in the care of people with COPD</p> <p>• Nurse Prescribers</p> <p>• Pharmacists</p>	<p>X</p>		

Recommendation 8	Antioxidants and mucolytic 8.1 The use of mucolytic and antioxidants in routine practice for management of patients with COPD is not recommended <small>(There are currently insufficient studies to recommend use in COPD)</small>				
	Enablers: <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Barriers: <p>Nil expected as not widely used</p>	Develop and roll-out a communication and dissemination strategy, including public engagement	<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Pharmacists 	X	Outcomes <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required Verification <ol style="list-style-type: none"> Improved knowledge and competencies for HCP
Recommendation 9	Leukotriene antagonists 9.1 A role for leukotriene receptor antagonists in the management of patients with COPD is not recommended <small>(Expert Opinion (Guideline Development Group))</small>				
	Enablers: <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Barriers <p>Nil expected as current practice</p>	Develop and roll-out a communication and dissemination strategy, including public engagement	<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Pharmacists 	X	Outcomes <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required Verification <ol style="list-style-type: none"> Improved knowledge and competencies for HCP

<p>Recommendation 10</p>	<p>Alpha One Anti-trypsin (AATD) Augmentation Therapy 10.1 It is recommended that AATD augmentation therapy might be considered in young patients who have not smoked or are ex-smokers with an FEV1 of 35-60% predicted with continued and progressive disease (Grade B) (<i>5D1D</i>). The National Centre for Pharmacoeconomics did not recommend reimbursement of AATD augmentation therapy in an Irish context following completion of a pharmacoeconomic evaluation, as cost-effectiveness was not demonstrated.</p>				
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement • Funding for AATD Therapy <p>Barriers</p> <ul style="list-style-type: none"> • Access to AATD Therapy as not currently funded by HSE 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> <p>Engagement with HSE in relation to reimbursement for AATD</p>	<ul style="list-style-type: none"> • Medical Doctors involved in the care of people with COPD • Nurse Prescribers • Pharmacists 			<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required 3. Engage with HSE stakeholders to discuss possibility of reimbursement for AATD augmentation therapy <p>Verification</p> <ol style="list-style-type: none"> 1. improved knowledge and competencies for HCP

<p>Recommendation 11</p>	<p>Smoking cessation 11.1 Smoking cessation measures are recommended for the prevention, delay and management of COPD, to include advice on smoking cessation, nicotine replacement therapy and pharmacotherapy (Grade A) (GOLD). At the moment, the effectiveness and safety of E. cigarettes as a smoking cessation aid remains uncertain.</p>				
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement • HSE's Making Every Contact Count initiative • HIQA Health Technology Assessment of Smoking Cessation Interventions • HSE QUIT Team • Tobacco Cessation Support Programme • COPD Support Ireland • COPD Advice line <p>Development of Health and well-being community networks</p> <p>Barriers:</p> <ul style="list-style-type: none"> • Cost of treatment • Lack of recognition that smoking is an addiction • Failure to tailor treatment to the individual • Lack of services and 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> • Department of Health • HSE • All healthcare professionals • COPD Support Ireland 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Awareness rising around importance of smoking cessation and the role of the healthcare professional 3. Established patient-centred smoking cessation services in CHNs. <p>Verification:</p> <ol style="list-style-type: none"> 1. Patient satisfaction 2. Improved knowledge and competencies of HCP

<p>Recommendation 12</p>	<p>time to undertake the intervention.</p>					
<p>Influenza vaccination 12.1 The provision of an annual influenza vaccination is recommended (Grade A) (<i>GOLD</i>).</p>						
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement National Immunisation Office • COPD Support Ireland • COPD Advice line <p>Barriers</p> <ul style="list-style-type: none"> • Lack of awareness among patients, policy-makers, healthcare professionals and general public around the importance of the vaccination for people with COPD • Lack of clarity on the role of healthcare professionals in delivering the vaccine • Existence of misconceptions regarding possible side effects of the vaccine • People with COPD not featuring prominently as a high- 	<ul style="list-style-type: none"> • Undertake a targeted information educational campaign for Respiratory Professionals, including consultants, through the Irish Thoracic Society. • Undertake a targeted education campaign of all Consultants via the Irish Hospital Consultants Association • Undertake a targeted educational campaign for all healthcare workers caring for patients with COPD • Offer vaccination prior to discharge from hospital for anyone with COPD. At every OPD visit for those with COPD, ask about and encourage vaccination • Broaden access to the vaccination through Community Pharmacists • COPD Support Ireland to promote importance of vaccination for people with COPD • Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> • All healthcare professionals caring for people with COPD (primary care, community including pharmacies, Long Stay, Hospitals) • COPD Support Ireland • Hospital Group/Hospital Managers/ Hospital Flu/CHO flu Leads • Nurse Prescribers 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Awareness raising around importance of the vaccination and role of healthcare professionals 3. Explore feasibility of undertaking an audit of vaccination uptake or survey of barriers in various settings. <p>Verification:</p> <ol style="list-style-type: none"> 1. KPIs for uptake of vaccination 2. Reporting by local Hospital management and Hospital Group management. 	

<p>Recommendation 13 [Priority Recommendation]</p>	<p>risk group in annual campaigns</p> <ul style="list-style-type: none"> Lack of focus on people with COPD not featuring prominently as a high-risk group in annual campaigns despite recommendation by the National Immunisation Advisory Access for some individuals to vaccination because of restrictions of COPD 					
<p>Pneumococcal Vaccination 13.1 The provision of the pneumococcal vaccination is recommended (Grade B) (GOLD).</p>						
<p>• As above for Recommendation 12</p>						

<p>Recommendation 14</p>	<p>Pulmonary rehabilitation 14.1 The provision of pulmonary rehabilitation to stable patients with exercise limitation despite pharmacological treatment is recommended (Grade A) (<i>GOLD</i>). 14.2 The provision of pulmonary rehabilitation to patients who have recently been hospitalised for an acute exacerbation of COPD is recommended (Grade B) (<i>GOLD</i>).</p>				
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement • Local champions • Funding • Space • Staffing • NCP Model of care PR <p>HSE's National Needs Assessment for Pulmonary Rehabilitation Services</p> <ul style="list-style-type: none"> • HSE's Living Well with a Chronic Condition: Framework for Self-Management Support <p>Develop a full time pulmonary rehabilitation team across 3 networks in line with Community Enhancement fund plan.</p> <p>Barriers</p> <ul style="list-style-type: none"> • Lack of existing capacity nationally • Availability of physiotherapists 	<ul style="list-style-type: none"> • Increase awareness of decision-makers around importance and benefits of Pulmonary Rehabilitation for people with COPD • Secure funding for Respiratory Consultants in hospitals that are currently without a Respiratory Consultant • Secure funding to increase medical respiratory physiotherapists in the acute setting and explore the expansion of Respiratory Integrated Care Physiotherapists for the community • The inclusion of the role of medical respiratory physiotherapist in Pulmonary Rehabilitation to be included in their job description • Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> • HSE • Medical Doctors involved in the care of people with COPD • Respiratory Physiotherapist • Respiratory Nurses • Hospital Group/Hospital or CHO Management 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Awareness raising of benefits of PR and include in discharge planning and integrated care planning 3. It is estimated that 32 additional PR Teams are required to meet need for PR for people who have been hospitalised and are at risk of re-admission. <p>Support for funding for the recruitment of additional PR Teams will be sought over 2 years (11 in Year 1; 21 in Year 2) through annual estimates process. If funding secured the Team would be appointed in the year following the request for funding.</p> <ol style="list-style-type: none"> 4. Selected sites engaged with in relation to roll-out of service once resources have been secured to expand PR service <p>Verification</p> <ol style="list-style-type: none"> 1. Inclusion in service plan, reporting of KPIs. Budget; 2. Learning from other sites

	<ul style="list-style-type: none"> Funding for Pulmonary Rehabilitation Programmes (PRP) Physical capacity challenges- lack of space Transportation of patients to and from location of PRP 					
<p>Recommendation 15</p> <p>Oxygen Therapy</p> <p>15.1 The provision of long-term oxygen therapy to patients with chronic stable hypoxemia with a PaO₂ less than 7.3kPa or a PaO₂ between 7.3 and 8kPa with signs of tissue hypoxia (haematocrit greater than 55%, pulmonary hypertension or cor pulmonale) is recommended (Grade A) (GOLD).</p> <p>15.2 The provision of oxygen for patients with moderate hypoxemia, nocturnal desaturation, or exercise-induced desaturation in patients with COPD is not routinely recommended (Grade A) (GOLD).</p>	<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement <p>Integrate oxygen clinics into new roles of RIC team and Outreach team in Community enhancement fund plan</p> <p>Barriers</p> <ul style="list-style-type: none"> Lack of awareness Absence of education around correct prescribing Cost of therapy <p>Change of practice in sites Resource requirements</p>	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> HSE Hospitals/Hospital Group Management CHO Management Medical Doctors involved in the care of people with COPD Nurse Prescribers 	X	X	X
						<p>Outcomes</p> <ol style="list-style-type: none"> Consultation with stakeholders and dissemination of National Clinical Guideline for the Management of COPD Awareness raising of benefits of LTOT and role of HCP Involve in discharge planning Oxygen clinic set up to be incorporated into new job descriptions for RIC teams and outreach teams in the Community network plans <p>Verification</p> <p>Steering group on LTOT, evidence planning and pathways for oxygen clinics</p>

<p>Recommendation 16</p>	<p>Nutritional Support 16.1 Nutritional support should be considered in all malnourished patients with COPD (Grade B) (GOLD).</p>					
<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement 	<p>Barriers</p> <ul style="list-style-type: none"> Lack of awareness of the importance of dieticians in the management of COPD Absence of specialist dietetic input/posts in the care of people with COPD Inconsistent use of nutritional screening tools to detect malnutrition in people with COPD 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> <p>Dissemination of HSE Standard Oral Nutritional Supplements Prescribing List for Adults Living in the Community (guide to prescribers re ONS)</p>	<ul style="list-style-type: none"> Dieticians Medical Doctors involved in the care of people with COPD HCP involved in the care of people with COPD 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Awareness rising of benefits of nutrition for staff and patients Improved recognition and response when therapy is required <p>Verification Local audit</p>

<p>Recommendation 17</p>	<p>Lung volume reduction surgery 17.1 Lung volume reduction surgery is recommended for carefully selected patients with upper lobe emphysema and low post rehabilitation exercise capacity (Grade A) (<i>GOLD</i>). 17.2 In selected patients, bullectomy can also be recommended (Grade C) (<i>GOLD</i>). 17.3 In selected patients with advanced emphysema, bronchoscopic interventions can reduce end-expiratory lung volume and improve exercise tolerance; health status and lung function at 6 to 12 months following treatment. Endobronchial valves (Grade A); Lung coils (Grade B); Vapour ablation (Grade B) (<i>GOLD</i>).</p>					
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement <p>Barriers</p> <ul style="list-style-type: none"> • The small volume of suitable patients has led to a lack of awareness of the importance of lung volume reduction surgery in some cases 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> • Medical Doctors involved in the care of people with COPD • Thoracic Surgeons 	<p>X</p>	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required 3. Awareness raising 4. Access to surgery <p>Verification</p> <ol style="list-style-type: none"> 1. Reporting by local Hospital management and Hospital Group management.
<p>Recommendation 18</p>	<p>Lung transplantation 18.1 It is recommended that appropriately selected patients with very severe COPD be considered for lung transplantation surgery (Grade C) (<i>GOLD</i>).</p>					
<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement • Organ donor campaign <p>Barriers</p> <ul style="list-style-type: none"> • Limited availability of organ donors • Lack of awareness of lung transplantation for select COPD patients 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> • HSE • Department of Health • Medical Doctors involved in the care of people with COPD • Thoracic Surgeons 	<p>X</p>	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved recognition and response when therapy is required <p>Verification</p> <ol style="list-style-type: none"> 1. Reporting by local Hospital management and Hospital Group management.

<p>Recommendation 19</p>	<p>Monitoring of Spirometry 19.1 In stable, diagnosed COPD patients, FEV 1 can be tracked by spirometry every two years (Expert Opinion) (<i>Guideline Development Group</i>).</p> <table border="1" data-bbox="220 286 762 1890"> <tr> <td data-bbox="220 1637 762 1890"> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Practice Nurses Spirometry Training <p>Course provided by the Irish Association of Respiratory Scientists</p> <p>Expanding diagnostics into the community through the community enhancement fund</p> <p>Barriers</p> <p>Lack of awareness of role of spirometry in management of COPD</p> </td> <td data-bbox="220 1173 762 1637"> <ul style="list-style-type: none"> Increase awareness of performing spirometry on stable COPD patients at appropriate time interval Continue to raise awareness in relation to availability of Spirometry Training Course for healthcare professionals Develop and roll-out a communication and dissemination strategy, including public engagement </td> <td data-bbox="220 994 762 1173"> <ul style="list-style-type: none"> Hospital Group Management All healthcare professionals providing care to people with COPD Irish Association of Respiratory Scientists </td> <td data-bbox="220 893 762 994"> <p>X</p> </td> <td data-bbox="220 792 762 893"> <p>X</p> </td> <td data-bbox="220 286 762 792"> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Training for HCP Posts for spirometry for community to support community enhancement fund plan <p>Verification:</p> <ol style="list-style-type: none"> Attendance records at training QI projects based on training </td> </tr> </table>						<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Practice Nurses Spirometry Training <p>Course provided by the Irish Association of Respiratory Scientists</p> <p>Expanding diagnostics into the community through the community enhancement fund</p> <p>Barriers</p> <p>Lack of awareness of role of spirometry in management of COPD</p>	<ul style="list-style-type: none"> Increase awareness of performing spirometry on stable COPD patients at appropriate time interval Continue to raise awareness in relation to availability of Spirometry Training Course for healthcare professionals Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> Hospital Group Management All healthcare professionals providing care to people with COPD Irish Association of Respiratory Scientists 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Training for HCP Posts for spirometry for community to support community enhancement fund plan <p>Verification:</p> <ol style="list-style-type: none"> Attendance records at training QI projects based on training
<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Practice Nurses Spirometry Training <p>Course provided by the Irish Association of Respiratory Scientists</p> <p>Expanding diagnostics into the community through the community enhancement fund</p> <p>Barriers</p> <p>Lack of awareness of role of spirometry in management of COPD</p>	<ul style="list-style-type: none"> Increase awareness of performing spirometry on stable COPD patients at appropriate time interval Continue to raise awareness in relation to availability of Spirometry Training Course for healthcare professionals Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> Hospital Group Management All healthcare professionals providing care to people with COPD Irish Association of Respiratory Scientists 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Training for HCP Posts for spirometry for community to support community enhancement fund plan <p>Verification:</p> <ol style="list-style-type: none"> Attendance records at training QI projects based on training 							
<p>Recommendation 20</p>	<p>Role of Palliative Care 20.1 For advanced COPD care, patients should be referred to a palliative care specialist as appropriate (Expert Opinion) (<i>Guideline Development Group</i>).</p> <table border="1" data-bbox="874 286 1212 1890"> <tr> <td data-bbox="874 1637 1212 1890"> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Specialist Palliative Care Teams Patient material e.g. Planning for the Future with COPD Guidance documents developed by the </td> <td data-bbox="874 1173 1212 1637"> <ul style="list-style-type: none"> Increase awareness of the role of Palliative Care in non-malignant conditions Promotion of Palliative Care Needs Assessment Education Module for healthcare professionals Education for Respiratory Teams on symptom management by Specialist Palliative Care Team Develop and roll-out a communication and dissemination strategy, including public engagement </td> <td data-bbox="874 994 1212 1173"> <ul style="list-style-type: none"> Palliative Care Specialists and Team Medical Doctors involved in the care of people with COPD Respiratory Nurses </td> <td data-bbox="874 893 1212 994"> <p>X</p> </td> <td data-bbox="874 792 1212 893"> <p>X</p> </td> <td data-bbox="874 286 1212 792"> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Protocol for management of care agreed Improved recognition and response when therapy is required <p>Verification</p> <ol style="list-style-type: none"> Reporting by local Hospital management and Hospital Group </td> </tr> </table>						<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Specialist Palliative Care Teams Patient material e.g. Planning for the Future with COPD Guidance documents developed by the 	<ul style="list-style-type: none"> Increase awareness of the role of Palliative Care in non-malignant conditions Promotion of Palliative Care Needs Assessment Education Module for healthcare professionals Education for Respiratory Teams on symptom management by Specialist Palliative Care Team Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> Palliative Care Specialists and Team Medical Doctors involved in the care of people with COPD Respiratory Nurses 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Protocol for management of care agreed Improved recognition and response when therapy is required <p>Verification</p> <ol style="list-style-type: none"> Reporting by local Hospital management and Hospital Group
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Management of Exacerbations in COPD						
Recommendation 21	Bronchodilator therapy					
	<p>21.1 The initiation of short acting acute bronchodilator therapy (salbutamol, ipratropium or combination) is recommended for patients with an exacerbation of COPD (Grade C) (<i>GOLD</i>).</p>					
	<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement <p>Barriers</p> <p>Nil expected as funding is available</p>	Develop and roll-out a communication and dissemination strategy, including public engagement	<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Pharmacists 	X		<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required <p>Verification</p> <p>Local audit</p>
Recommendation 22	Steroids					
	<p>22.1 A course of systemic steroids (prednisolone recommended dose of 40mgs once daily for five days) to be administered orally to all patients is recommended. Therapy should not routinely be administered for longer than this (Grade A) (<i>GOLD</i>).</p>					
	<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement <p>Barriers</p> <p>Nil expected as funding is available</p>	Develop and roll-out a communication and dissemination strategy, including public engagement	<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Pharmacists 	X		<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required

<p>Recommendation 23</p>	<p>Antibiotics 23.1 Oral antibiotic use for patients with exacerbations of COPD associated with increased dyspnoea and associated increased sputum purulence or volume is recommended. First line antibiotic choices should include doxycycline, amoxicillin or a macrolide, reserving broader spectrum antibiotics such as quinolones for specific indications is recommended. However, the choice of antibiotics may be modified due to local bacterial resistance patterns or an individual's sputum microbiology (Grade B) <i>(GOLD/Expert Opinion Guideline Development Group)</i>.</p> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement <p>Barriers:</p> <p>Nil expected as funding is available</p> <p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> <ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers Respiratory Physiotherapists Nurse Prescribers Pharmacists <p>X</p> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required <p>Verification</p>					
<p>Recommendation 24</p>	<p>Non-invasive ventilation 24.1 The use of non-invasive ventilation in patients with acute exacerbations of COPD who develop acute respiratory failure associated with respiratory acidosis is recommended i.e. a PaCO₂ greater than 6kPa and an arterial PH less than 7.35 which is persistent following rationalization of delivered oxygen therapy (Grade A) <i>(GOLD)</i>.</p> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Education - Centre for Nurse and Midwifery Education provides NIV training <p>Barriers:</p> <ul style="list-style-type: none"> Lack of resources <p>Increase NIV protocol awareness</p> <ul style="list-style-type: none"> Increase awareness of NIV training Develop and roll-out a communication and dissemination strategy, including public engagement <p>Medical Doctors involved in the care of people with COPD</p> <ul style="list-style-type: none"> Respiratory Nurses HSE <p>X</p> <p>X</p> <p>X</p> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required Pathways criteria in place <p>Verification</p> <ol style="list-style-type: none"> Pathways in place Local service audit 					

	<p>(funding not available)</p> <ul style="list-style-type: none"> Lack of familiarity/use of NIV Lack of training to deliver NIV 							
<p>COPD Outreach Service</p>								
<p>25 [Priority Recommendation]</p>	<p>The involvement of the COPD outreach team as early as possible in the care of patients admitted to hospital with an exacerbation of COPD <i>(Expert Opinion) (Guideline Development Group)</i>.</p>							
	<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Local champions NCP Outreach Implementation guide <p>Barriers</p> <ul style="list-style-type: none"> Lack of availability of trained staff to provide the service Lack of awareness of benefits of Outreach Service for people with COPD Lack of funding to expand service to new sites 	<ul style="list-style-type: none"> Hospital Group/Hospital Management to seek COPD Outreach Service from HSE. Increase awareness of benefits of Outreach Service in the management of COPD Develop and roll-out a communication and dissemination strategy, including public engagement 	<ul style="list-style-type: none"> HSE Hospital Group Management Respiratory Medical Doctors involved in the care of people with COPD Respiratory Clinical Nurse Specialists Respiratory Physiotherapists COPD Support Ireland 	<p>X</p>	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when Outreach is indicated It is estimated that 15 sites require a COPD Outreach Service. Support for funding for expansion of sites through recruitment of staff will be sought over 3 years (4 sites in Year 1; 11 sites in Year 2) through annual estimates process. If funding is secured, appointments would be made in the year following funding submission. Selected sites engaged with in relation to roll-out of service once resources have been secured to provide an Outreach service <p>Verification</p> <ol style="list-style-type: none"> Inclusion in service plan, reporting of KPIs. Budget, System in place to share implementation experiences and learning between sites. Local reporting 	

<p>Recommendation 26</p>	<p>Respiratory Health Care Professionals 26.1 It is recommended that a multidisciplinary team of respiratory specialists are key in delivering integrated care for COPD (Expert Opinion) (Guideline Development Group).</p>				
<p>Enablers</p> <ul style="list-style-type: none"> Advanced and on-going workforce planning and CPD support for HCP <p>Barriers</p> <ul style="list-style-type: none"> Costs Lack of specialist respiratory physiotherapists & CNSsp Lack of awareness of importance of role of HCP in the management of COPD Failure to recognise the value of HCP in the management of COPD 	<ul style="list-style-type: none"> Raising awareness of role of physiotherapists and CNSp amongst medical practitioners Development of physiotherapist & CNSp led clinics Increasing the profile of physiotherapists and CNSp within a service e.g. presenting at Grand Rounds, engagement with GPs 	<ul style="list-style-type: none"> Respiratory Consultants Physiotherapists Physiotherapy Managers Allied Healthcare Professionals Hospital Group and CHO Management CNSp Nurse Managers Physiotherapy & Nursing Managers Irish Society of Chartered Physiotherapists HSE National Health & Social Care Professions Office INMO 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Consultation with stakeholders and dissemination of National Clinical Guideline for the Management of COPD Improved recognition and awareness of roles of respiratory health professionals <p>Verification</p> <ol style="list-style-type: none"> MDT meetings and case management

<p>Recommendation 27</p>	<p>Theophylline 27.1 The use of theophylline in acute exacerbations of COPD is not recommended (Grade B) (GOLD).</p> <table border="1" data-bbox="215 237 534 1848"> <tr> <td data-bbox="215 1601 375 1848"> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement </td> <td data-bbox="215 1131 375 1601"> <p>Develop and roll-out a communication and dissemination strategy, including public engagement</p> </td> <td data-bbox="215 952 375 1131"> <ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers </td> <td data-bbox="215 862 375 952"> <p>X</p> </td> <td data-bbox="215 660 375 862"></td> <td data-bbox="215 237 375 660"> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required <p>Verification</p> <ol style="list-style-type: none"> Increased knowledge and competencies of HCP </td> </tr> </table>						<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement 	<p>Develop and roll-out a communication and dissemination strategy, including public engagement</p>	<ul style="list-style-type: none"> Medical Doctors involved in the care of people with COPD Nurse Prescribers 	<p>X</p>		<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved recognition and response when therapy is required <p>Verification</p> <ol style="list-style-type: none"> Increased knowledge and competencies of HCP
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<p>Recommendation 28 [Priority Recommendation]</p>	<p>Oxygen therapy prescribing and monitoring in COPD</p> <p>28.1 For acutely unwell patients with COPD who are hypoxic and potentially at risk for hypercapnia a target saturation range (SpO₂) of 88-92% is suggested pending arterial blood gas results (<i>Expert Opinion</i>) (<i>Guideline Development Group</i>).</p> <p>28.2 Patients discharged home following hospitalisation on oxygen therapy should be evaluated for the need to remain on long term oxygen therapy 60-90 days after discharge and during a period of relative clinical stability. Long term oxygen therapy should not be continued if patients do not meet the criteria (<i>Expert Opinion</i>) (<i>Guideline Development Group</i>).</p> <p>28.3 Routinely offering ambulatory LTOT for patients with chronic, stable COPD and isolated exercise-induced hypoxemia is not recommended (Grade A) (<i>GOLD</i>).</p> <p>28.4 Patients with stable COPD with persistent evidence of hypoxaemia (i.e.: SpO₂ ≤92%) should be assessed for long term oxygen therapy (<i>Expert Opinion</i>) (<i>Guideline Development Group</i>).</p> <p>28.5 The provision of long-term oxygen therapy to patients with chronic stable hypoxemia with a PaO₂ less than 7.3 kPa or a PaO₂ between 7.3 and 8kPa with signs of tissue hypoxia (haematocrit greater than 55%, pulmonary hypertension or cor pulmonale) is recommended (Grade A) (<i>GOLD</i>).</p> <p>28.6 The provision of oxygen for patients with moderate hypoxemia, nocturnal desaturation, or exercise-induced desaturation in patients with COPD is not routinely recommended (Grade A) (<i>GOLD</i>).</p> <table border="1" data-bbox="534 237 1204 1848"> <tr> <td data-bbox="534 1601 981 1848"> <p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Incorporate oxygen clinics into roles of RIC team and Outreach </td> <td data-bbox="534 1131 981 1601"> <ul style="list-style-type: none"> The development of regional centres providing oxygen assessment and review (OAR) clinics which have capacity to provide home visits and link with community respiratory teams should be funded and prioritised. Hospital/Hospital Groups to seek funding from HSE for expansion of oxygen clinics </td> <td data-bbox="534 952 981 1131"> <ul style="list-style-type: none"> HSE Hospital Group Management CHO Management Medical Doctors </td> <td data-bbox="534 862 981 952"> <p>X</p> </td> <td data-bbox="534 660 981 862"> <p>X</p> </td> <td data-bbox="534 237 981 660"> <p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved education and competency of Oxygen therapy for HCP Improved recognition and response when therapy is required It is estimated that 32 sites require an </td> </tr> </table>						<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Incorporate oxygen clinics into roles of RIC team and Outreach 	<ul style="list-style-type: none"> The development of regional centres providing oxygen assessment and review (OAR) clinics which have capacity to provide home visits and link with community respiratory teams should be funded and prioritised. Hospital/Hospital Groups to seek funding from HSE for expansion of oxygen clinics 	<ul style="list-style-type: none"> HSE Hospital Group Management CHO Management Medical Doctors 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved education and competency of Oxygen therapy for HCP Improved recognition and response when therapy is required It is estimated that 32 sites require an
<p>Enablers:</p> <ul style="list-style-type: none"> Stakeholder engagement Patient engagement and involvement Incorporate oxygen clinics into roles of RIC team and Outreach 	<ul style="list-style-type: none"> The development of regional centres providing oxygen assessment and review (OAR) clinics which have capacity to provide home visits and link with community respiratory teams should be funded and prioritised. Hospital/Hospital Groups to seek funding from HSE for expansion of oxygen clinics 	<ul style="list-style-type: none"> HSE Hospital Group Management CHO Management Medical Doctors 	<p>X</p>	<p>X</p>	<p>Outcomes</p> <ol style="list-style-type: none"> Improved awareness and knowledge of guideline Improved education and competency of Oxygen therapy for HCP Improved recognition and response when therapy is required It is estimated that 32 sites require an 							

<p>Recommendation 29 [Priority Recommendation]</p>	<p>teams for Community enhancement fund plans</p> <p>Barriers</p> <ul style="list-style-type: none"> • Lack of formal follow up for many patients prescribed domiciliary oxygen • Lack of dedicated oxygen assessment and review services • Lack of awareness around benefits of oxygen assessment 	<ul style="list-style-type: none"> • Develop and roll-out a communication and dissemination strategy, including public engagement • Irish Guidelines on Long Term Oxygen Therapy in Adults 2015 • Irish Guidelines on the Administration of Oxygen Therapy in the Acute Clinical Setting in Adults 2017 	<p>involved in the care of people with COPD</p> <ul style="list-style-type: none"> • Respiratory Nurses • Respiratory Physiotherapists • Nurse Prescribers • Oxygen companies 			<p>Oxygen Assessment Clinic. Support for funding for expansion of sites through recruitment of staff will be sought over 2 years (11 sites in Year 1; 21 sites in Year 2 through annual estimates process. If funding is approved, appointments will be made in the year following the submission for funding</p> <ol style="list-style-type: none"> 4. Selected sites engaged with in relation to the establishment of clinics once resources have been secured <p>Verification</p> <ol style="list-style-type: none"> 1. Local Oxygen steering group 2. Pathways in place for clinics and prescription and follow up 3. Education material staff and patients 4. Patient satisfaction survey 5. Service audit
<p>Pathways, Bundles and Checklists for Managing Acute Exacerbation</p> <p>29.1 It is recommended that an admission and discharge bundle be applied to all patients admitted to hospital with an exacerbation of COPD (Expert Opinion) (<i>Guideline Development Group</i>).</p>						
	<p>Enablers:</p> <ul style="list-style-type: none"> • Stakeholder engagement • Patient engagement and involvement • Bundles developed by the National Clinical Programme for COPD <p>Barriers</p> <ul style="list-style-type: none"> • Resistance to change in practice • Lack of awareness of benefits of implementing pathways, bundles and checklists • Resourcing and time constraints for Medical Doctors involved in the care of people with COPD to apply pathways, bundles and checklists 	<p>Increase awareness through dissemination of materials relating to pathways, bundles and checklists and promotion of the value of implementing the materials. Materials to be circulated electronically so no large scale printing or postage costs incurred.</p>	<ul style="list-style-type: none"> • COPD Clinical Advisory Group • Medical Doctors involved in the care of people with COPD • Respiratory Nurses • Respiratory Physiotherapists • Hospital Group Management 			<p>Outcomes</p> <ol style="list-style-type: none"> 1. Improved awareness and knowledge of guideline 2. Improved education and competencies for HCP 3. Improved recognition of pathways and bundles of care <p>Verification:</p> <ol style="list-style-type: none"> 1. Pathways and bundles of care available and in use in hospitals and primary care 2. Education material patients and staff

Implementation of overall guideline

While the implementation plan is specific to the individual recommendations in the guideline, some actions will assist with guideline implementation as a whole. These include establishing an implementation team, developing a dissemination and communication plan and developing specific implementation tools and resources. In the boxes below, please give a high-level description of how these actions will be incorporated into the implementation of your guideline:

Implementation team: Describe the structure and governance of your implementation team, list your implementation team members and specify meeting frequency. Outline planned training and capacity building for team members.

- Central Respiratory National Team – NCP Respiratory / PMO / Chronic Disease Team
- Local Level - Local Implementation Governance Groups (LIGG) to include Practice Development and QI Team. Example of membership would be executive manager, clinical lead /consultant, senior nurse manager, frontline staff, education facilitator, self-management support, respiratory leads, risk management

Dissemination and communication plan: Describe your communications strategy and dissemination plan for distributing, sharing, promoting and applying guideline recommendations e.g. publications/articles, presentations, awareness-raising activities, media, knowledge transfer, collaboration and networking.

- HRB CICER Publication
- Communication / Marketing: NCP Respiratory Website /NCP Respiratory Email Account / Twitter / Flyers / Infographics/ local hospital newsletters/intranets/ National conferences e.g. Patient Safety Conference
- Organise an inaugural Respiratory Integrated Care international conference for Ireland
- Case scenarios to be used in undergraduate/CPD education
- Communicate with hospitals on their key responsibilities and expectations e.g. all staff to have protected time to participate in education, review and improvement of governance, embed in existing forums/meetings, journal clubs, ground rounds etc.

Key communication messages:

- Shift to integrated care
- Supports implementation of Sláintecare

Implementation tools: List the supporting tools and resources developed to support this guideline/PPPG and where these tools can be accessed, e.g. materials on website, patient information leaflets, training linked to CPD, e-learning, podcasts, study days, research, checklists, audit tools, seminars, conference, patient pathways, toolkits, algorithms, teaching aids, presentations.

- Education Programme: Blended Learning Programme - e- learning / face to face training/ simulation training/ study days/ education forums / case scenarios to use for undergraduate and postgraduate training
- Communication / Marketing: NCP Respiratory Website / NCP Respiratory Email Account / Twitter / Flyers / Infographics/ local hospital newsletters/intranets/ National conferences e.g. Patient Safety Conference
- Clinical Audit Tools / Data Collection Tools /Reporting Tools / Clinical Outcome Monitoring Tools.
- Research Proposals

Appendix 9: Supporting tools

End to End COPD MOC.

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/moc/end-to-end-copd-model-of-care-december-2019.pdf>

COPD Communication Card.

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-communication-card.pdf>

COPD Self-care plan

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-self-care-plan.pdf>

COPD Acute management bundle

<https://www.hse.ie/eng/services/publications/clinical-strategy-and-programmes/copd-acute-management-bundle.pdf>

COPD Discharge Plan.

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-discharge-bundle-nccp-2018.pdf>

A guidance document for setting up Pulmonary Rehabilitation for Healthcare Professionals (2020).

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/hse-guidance-document-on-pulmonary-rehabilitation.pdf>

A guidance document for setting up COPD Outreach services for Healthcare professionals (2020).

<https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/national-clinical-programme-for-respiratory.pdf>

National Framework for the Integrated Prevention and Management of Chronic Disease in Ireland 2020-2025

<https://www.hse.ie/eng/about/who/cspd/icp/chronic-disease/documents/national-framework-integrated-care.pdf>

National Framework for the Integrated Prevention and Management of Chronic Disease in Ireland 2020 – 2025: A 10 step guide

<https://www.hse.ie/eng/about/who/cspd/icp/chronic-disease/documents/the-chronic-disease-integrated-care-programme-10-step-guide.pdf>

Integrated MOC for the Prevention and Management of Chronic Disease

<https://www.hse.ie/eng/about/who/cspd/icp/chronic-disease/documents/chronic-disease-service-model-implementation-resource-pack.pdf>



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