COPD-X Summary of Changes V2.55, August 2018

The latest update of The COPD-X Plan: Australian and New Zealand Guidelines for the Management of COPD has been provided by Lung Foundation Australia in conjunction with the Thoracic Society of Australia and New Zealand following the August 2018 meeting of the COPD-X Guidelines Committee.

Implications for Clinical Practice

All changes made to the document are outlined below and those highlighted in yellow are differentiated as the most significant and likely to have an impact on clinical practice.

C. Confirm diagnosis and assess severity

A meta-analysis of six prospective cohort studies following children with or without wheezing into adulthood found an association between childhood atopic wheezing and prevalence of COPD in adulthood (Ma 2018).

C2.3 Spirometry

Respiratory symptoms are of clinical importance even in those current or former smokers with preserved lung function (Woodruff 2016). Further evidence is required for optimal management of these patients.

O. Optimise Function

O1.2.2 Long-acting beta2-agonists (LABA)

This section has been updated, with headings included.

O4.2 Inhaled corticosteroids and long-acting beta2-agonists and long-acting antimuscarinics in combination (ICS/LABA/LAMA)

In the TRIBUTE study of COPD patients with severe airflow obstruction and frequent exacerbations, ICS/LABA/LAMA in a single MDI (beclometasone/formoterol/glycopyrronium, twice daily) was associated with reduced exacerbations over 52 weeks, compared to once daily LAMA/LABA (indacaterol/glycopyrronium) (Papi 2018) [evidence level II]. Pneumonia rates were similar.

O4.2.1 Eosinophil count and inhaled corticosteroids

In a US cohort study (Zeiger 2018), elevated blood eosinophils at baseline were independently associated with COPD exacerbations and COPD-related ED visits or hospitalisations during a year of follow-up. Analysis of data from the COPD Gene and ECLIPSE longitudinal studies (Yun 2018) also found baseline blood eosinophils ≥ 300 cells/ mm^3 to be associated with increased exacerbation frequency. In a large group of patients from the Danish Copenhagen General Population Study (Vedel-Krogh 2018), elevated blood eosinophils in people whose FEV_1 was < 50% predicted were associated with a higher risk of

hospitalisation for pneumonia compared with those with the same degree of airflow obstruction but a lower eosinophil count. In contrast to this, the Korean Obstructive Lung Disease cohort study found that patients with COPD who had persistently high blood eosinophils had a better survival rate and improved symptoms and quality of life than those with persistently low eosinophil counts while those with variable eosinophil counts had survival rates similar to those with persistently low counts (Shin 2018).

O4.3 Biologic therapies

A phase 2a trial of benralizumab did not demonstrate benefit in terms of exacerbations or quality of life in a group of patients with COPD who had at least one exacerbation in the preceding year and a sputum eosinophil count of ≥ 3% in the preceding year, however the investigators felt that a prespecified subgroup analysis of patients with higher blood eosinophil counts supported further investigation of the effects of this drug in patients with COPD and eosinophilia (Brightling 2014).

O6.1 Pulmonary rehabilitation

Travel and transport are consistently identified as barriers to participants undertaking programs that include supervised exercise training (Keating 2011). A systematic review and meta-analysis compared exercise training programs (ETP) delivered in patients' homes or community settings with out-patient ETPs in people with stable COPD (Wuytack 2018). Trials selected for this review were ETPs of at least 4 weeks duration with or without additional components often included in pulmonary rehabilitation programs such as patient education and nutritional support. Programs were equally effective for improving quality of life and exercise capacity irrespective of the setting [evidence level I]. This finding is important because providing programs in community and home-based settings may overcome some of the barriers to program uptake and completion.

O6.4 Neuromuscular electrical stimulation

Neuromuscular electrical stimulation (NMES) uses an intermittent electrical current to elicit a contraction of a superficial peripheral muscle and it aims to improve muscle power or endurance. In people with COPD, NMES is generally applied to the thigh muscles. NMES is associated with a very low ventilatory load and thus dyspnoea in contrast to whole body exercise training. The findings of a Cochrane Review (Hill 2018) showed that NMES applied in isolation improved peripheral muscle force and endurance and 6-minute walk distance [evidence level I]. The findings of studies that applied NMES in addition to conventional exercise training, compared to conventional exercise training alone, showed no additional gain in muscle performance. The quality of the evidence in this review was rated as low. The main clinical applications for NMES are for patients unable to engage in whole body exercise training, for example due to very severe dyspnoea, including patients with an exacerbation and those awaiting transplantation.

O7.2.2 Safety of beta-blockers

Beta-blocker treatment did not diminish the beneficial effects of inhaled treatments on post bronchodilator FEV_1 or COPD exacerbations. Prospective randomised controlled data is still needed (Dransfield 2018).

O7.8 Lung cancer

During the longitudinal follow-up of the COPDGene Study, 169 lung cancer patients were matched (for age, race, sex, smoking status, average smoking pack-years and years since quitting smoking) against 671 control subjects with no reported lung cancer diagnosis. Characteristics associated with a future risk of lung cancer included airflow obstruction as measured by FEV_1/FVC, history of exacerbations in the previous year and the presence of visual emphysema. The results were similar when percentage predicted FEV_1 was used as the measure of airflow obstruction (Carr 2018).

O9.2 Lung volume reduction surgery and bronchoscopic interventions

A multi-centre prospective RCT investigating endobronchial valve treatment in heterogeneous Emphysema, the LIBERATE study (Criner 2018) was included with results consistent with several recent trials showing benefits in quality of life, lung function and walk distance. Of note, a 27% pneumothorax rate and a 3% 45 day mortality rate was reported.

O10. Palliative and supportive care

Abdallah et al demonstrated improvements in exertional dyspnoea and exercise endurance, as measured by cardiopulmonary exercise testing with single dose immediate release morphine syrup (0.1mg/kg) up to a maximum of 10mg (Abdallah 2017).

P: Prevent deterioration

P2.1 Influenza immunisation

In people aged 65 years and older, annual influenza immunisation may lower the risk of influenza and probably lowers the risk of influenza-like illness (Demicheli 2018). A Cochrane systematic review by Kopsaftis (Kopsaftis 2018) has shown that in people with COPD, inactivated influenza vaccine reduced the total number of exacerbations per vaccinated person, compared to placebo (rated as low quality evidence due to only 2 RCTs) [evidence level I]. There was no change in rates of hospital admission or mortality. Adverse effects are mild, local, transient and self-limiting and include sore arm, mild fever and arthralgia.

P8. Humidification and nasal high flow (NHF) therapy

Inclusion of nasal high flow (NHF) therapy in heading and revision of section to include discussion of several trials which have shown benefits of NHF therapy. However, it is noted that the role of long term domiciliary NHF in COPD is still unclear.

D: Develop a plan of care

D3.2 Exacerbations and crises

A randomised controlled trial of 577 subjects with mild COPD, obtained from UK primary care COPD registers of 71 general practices evaluated a telephone health coaching programme which included the provision of a pedometer, written educational documents, diary, inhaler use education and encouragement of medication adherence (Jolly 2018). It is noted that most potential subjects did not respond to an invitation to participate. While there was no benefit on the primary outcome of quality of life as measured by the St George Respiratory Questionnaire, nor the secondary outcomes of anxiety and depression, other secondary outcomes of self-reported physical activity and inhaler usage did improve [evidence level II].

D4. Telehealth

Baroi et al (Baroi 2018) reviewed feasibility and comparative studies, which used a heterogeneous range of measurement devices (including spirometers, respiratory rate sensors, impedance oscillometers, auscultation microphones, pedometers, capnometers and oximeters), which aimed to identify COPD, and/or to detect early exacerbations of COPD. Information communication methods between subjects and clinicians included videoconferencing and questionnaires. The studies that did report positive results were more likely to be those that were more integrated into existing respiratory outpatient services, and in people with high risk of readmission due to a COPD exacerbation.

D5. Treat anxiety and depression

Mindfulness-based cognitive therapy in conjunction to pulmonary rehabilitation improved depressive symptoms compared to pulmonary rehabilitation alone (Farver-Vestergaard 2018).

X: Manage eXacerbations

A retrospective database study of over 2 million COPD admissions among American Medicare recipients above the age of 65 reported a 12 month mortality rate of 26.2% (Lindenauer 2018). The 12 month mortality rate for those requiring invasive and non-invasive ventilation was 45.7% and 41.8% respectively. This study showed a 12 month readmission rate of 64% (Lindenauer 2018).

X2.1 Confirm exacerbation and categorise severity

As COPD is defined by demonstration of airflow limitation which is not fully reversible, spirometry is essential for its diagnosis and this may be performed prior to discharge from hospital to confirm the diagnosis (Rea 2011).

X2.2.2 Systemic corticosteroids for treatment of exacerbations

Replacement of 2014 Walters Cochrane Review with 2018 update (Walters 2018) and inclusion of wording stating five days of oral corticosteroids is likely to be sufficient.

X2.2.3 Antibiotics for treatment of exacerbations

Wording updated: If patients do not respond to amoxycillin or doxycyclin, or if resistant organisms are suspected, amoxycillin–clavulanate could be prescribed.

X3.2 Non-invasive ventilation

A local prospective observational cohort study demonstrated that ward-based non-invasive ventilation (NIV) (managed by respiratory medical and nursing staff), compared with high dependency unit (HDU) and ICU-based NIV, achieved equivalent clinical outcomes and was substantially more cost-effective (Parker 2018). The optimal location for provision of NIV should be determined by local experience and availability of expertise.

X4. Uptake and impact of guidelines for exacerbations

Section moved from Appendix 6 and inclusion of new wording: A prospective cohort study of 415 patients who presented at 46 EDs in 5 Asia-Pacific countries with an exacerbation of COPD highlights the public health and acute care hospital burden of COPD exacerbations (Kelly 2018). Clinical management findings against COPD-X benchmarks are to be interpreted with caution as they are based on case-note audit, but were indicative of excessive use of uncontrolled oxygen therapy and a suboptimal use of a combination of inhaled corticosteroid/bronchodilator therapy, arterial blood gas measurement and also treatment with non-invasive ventilation.

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