Chronic obstructive pulmonary disease (COPD) is a leading cause of death in Australia, mainly affecting older people. Death rates due to COPD increase with age and are almost double in males compared to females.

COPD is usually acquired after a long period of exposure to inhaled noxious agents, such as cigarette smoke, and is characterised by airflow limitation that is not fully reversible and by associated exertional breathlessness. It is usually progressive over time. COPD may be associated with emphysema and/or chronic bronchitis.

A number of new medications are now available for the treatment of COPD. The choice of medication should take into account the person’s symptomatic response, the potential to reduce exacerbations and preference for devices.

Symptoms
COPD causes progressive breathlessness with cough and wheeze, punctuated by exacerbations (flare-ups) that may lead to hospital admission. It is associated with increasing frailty and a number of comorbidities, such as cardiovascular disease and diabetes mellitus.

Signs and symptoms include:
- Breathlessness
- Cough and sputum production
- Chest tightness
- Dyspnoea (shortness of breath)
- Wheezing
- Reduced exercise tolerance
- Decreased health-related quality of life
- Acute exacerbations

Classification
The Australian COPD-X Guidelines identifies three classes of COPD based on FEV₁ and functional assessment:
- Mild – FEV₁ 60-80% predicted, few symptoms, no effect on daily activities, breathless on moderate exertion
- Moderate - FEV₁ 40-59% predicted, increasing dyspnoea, breathless on the flat, increasing limitation of daily activities
- Severe - FEV₁ less than 40% predicted, dyspnoea on minimal exertion, daily activities severely curtailed

Treatment
Non-pharmacological interventions include smoking cessation, weight control, exercise and pulmonary rehabilitation.

Pharmacological management of COPD includes treatment of symptoms (e.g. breathlessness) and prevention of deterioration. A step-wise approach is recommended irrespective of severity of disease, aiming for adequate control.

Inhaled bronchodilators provide symptom relief and may increase exercise capacity. Inhaled corticosteroids should be considered in patients with moderate-severe COPD and frequent exacerbations. Long term use of oral corticosteroids, such as prednisone or prednisolone, is not recommended.

Short-acting reliever medications (SABAs) include salbutamol (e.g. Ventolin), terbutaline (Bricanyl) and ipratropium (e.g. Atrovent). SABAs should be used for symptom relief before adding maintenance therapy with one or more long-acting bronchodilators.

Long-acting bronchodilators
Long-acting muscarinic antagonists (LAMA) and long-acting beta₂-agonists (LABA) provide symptom relief and may reduce exacerbations. LAMAs and LABAs may be used alone or in combination. There is no rationale for using two medications from the same class.

Long-acting muscarinic antagonists (LAMA) include:
- Tiotropium (Spiriva HandiHaler)
- Aclidinium (Bretaris Genuair)
- Umeclidinium (Anoro Ellipta)
- Glycopyrronium (Seebri Breezhaler)

All LAMAs are restricted on the PBS for maintenance treatment of COPD in adults. The new medications have similar costs and efficacy to tiotropium. Aclidinium requires twice daily dosing and the others are all once daily.

Long-acting beta₂-agonists (LABA) include:
- Salmeterol (Serevent)
- Eformoterol fumarate (Oxis Turbuhaler, Foradile)
- Indacaterol (Onbrez Breezhaler)
- Olodaterol (Striever Respimat)
- Vilanterol (currently only available in a combination product)

continued over
Olodaterol is approved as long-term, once-daily maintenance treatment of airflow obstruction in patients with COPD, including chronic bronchitis and/or emphysema. The bronchodilator effect occurs within five minutes. Modest improvements in trough FEV₁ occur, however evidence does not show any significant effects on exacerbations. Olodaterol is not available on the PBS.

Indacaterol provides rapid-onset bronchodilation lasting over 24 hours. This medication provides similar symptomatic improvement and greater improvement in lung function compared with salmeterol and eformoterol in COPD. Indacaterol has been demonstrated to be non-inferior in safety and efficacy (FEV₁ and symptom reduction) to once-daily tiotropium.

Salmeterol and eformoterol are only indicated for treatment of asthma on the PBS.

Inhaled corticosteroids (ICS) include:
- Beclomethasone (Qvar Inhaler, Qvar Autohaler)
- Budesonide (Pulmicort Turbuhaler)
- Fluticasone propionate (Flixotide Inhaler, Flixotide Accuhaler)
- Ciclesonide (Alvesco) (only approved for asthma)

Fixed-dose combination products
A number of new fixed-dose combination products are available as ICS/LABA or LAMA/LABA combinations, simplifying treatment regimens and reduce costs.

ICS/LABA
When FEV₁ is less than 50% predicted and 2 or more exacerbations in the previous 12 months are experienced, inhaled glucocorticoid (ICS)/LABA combination therapy is recommended by guidelines. LABA monotherapy should be ceased once ICS/LABA is initiated.

- Budesonide/eformoterol (Symbicort Rapihaler, Symbicort Turbuhaler)
- Fluticasone propionate/salmeterol (Seretide Inhaler, Seretide Accuhaler)
- Fluticasone furoate/vilanterol (Breo Ellipta)

Fluticasone propionate/eformoterol (Flutiform Inhaler) is another new combination product; however it is currently only approved for the treatment of asthma.

Fluticasone furoate/vilanterol (Breo Ellipta) has the advantage of once daily dosing compared with twice daily dosing with other ICS/LABA products. The Ellipta device is pre-loaded and breath-activated which may be preferred by some people. Breo Ellipta is available in two strengths, however only the 100/25mcg strength is registered for the symptomatic treatment of COPD, where the FEV₁ is less than 70% predicted normal (post-bronchodilator) and there is a history of exacerbations despite regular bronchodilator therapy. There is no significant difference in efficacy or side effects compared with existing fluticasone propionate/salmeterol and budesonide/eformoterol products.

LABA/LAMA
New LABA/LAMA combinations include:
- Vilanterol/umeclidinium (Anoro Ellipta)
- Indacaterol/glycopyrronium (Ultibro Breezhaler)

Vilanterol/umeclidinium (Anoro Ellipta) is a once daily fixed-dose bronchodilator for people with moderate to severe COPD. It has similar efficacy to both ingredients delivered concurrently and significantly improves lung function compared with either vilanterol, umeclidinium or tiotropium alone.

Indacaterol/glycopyrronium 110/50mcg (Ultibro Breezhaler) is also once daily for maintenance in moderate to severe COPD. It is equi-effective dose to umeclidinium 62.5mcg/vilanterol 25mcg.

Both LABA/LAMA combination products are PBS approved for the treatment of COPD for patients already stabilised on concomitant LAMA and LABA therapy. This combination shows modest reductions in exacerbations (many trials excluded frequent exacerbators) and use of rescue medication. New LABA/LAMAs are superior to ICS/LABA combinations, improving FEV₁, symptoms and quality of life.

Triple therapy
There is some evidence to support triple therapy with a LAMA, LABA and ICS for moderate to severe COPD, frequent exacerbations and predominant chronic bronchitis.

Summary
The increasing number of inhaled medicines for COPD provides treatment options but has the potential for confusion and duplication of treatment. Choice of treatment should be guided by the severity of symptoms, risk of exacerbations and the resident’s response to treatment, with individual preference and dexterity. It is important to assess device technique at every opportunity and before any dose increase or addition of new medicines.

Videos of device technique are available on the National Asthma Council, Asthma Australia, Lung Oundation Australia and NPS MedicineWise websites.

References
Mortality from asthma and COPD in Australia. AIHW 2014
NPS RAPID

The Webstercare Consultant Pharmacist Continuing Education Service come to you each month from your pharmacist.
If you would like extra copies please visit www.webstercare.com.au or ask your pharmacist.