



West Park
HEALTHCARE CENTRE

**get
your
life
back**

COPD: What's new in inhalation therapy

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- describe the goals of therapy for COPD
- describe the step wise approach in the pharmacologic management of COPD
- describe the various types of respiratory medications and devices used

COPD is a respiratory disorder largely caused by smoking (**CB and emphysema**) characterized by:

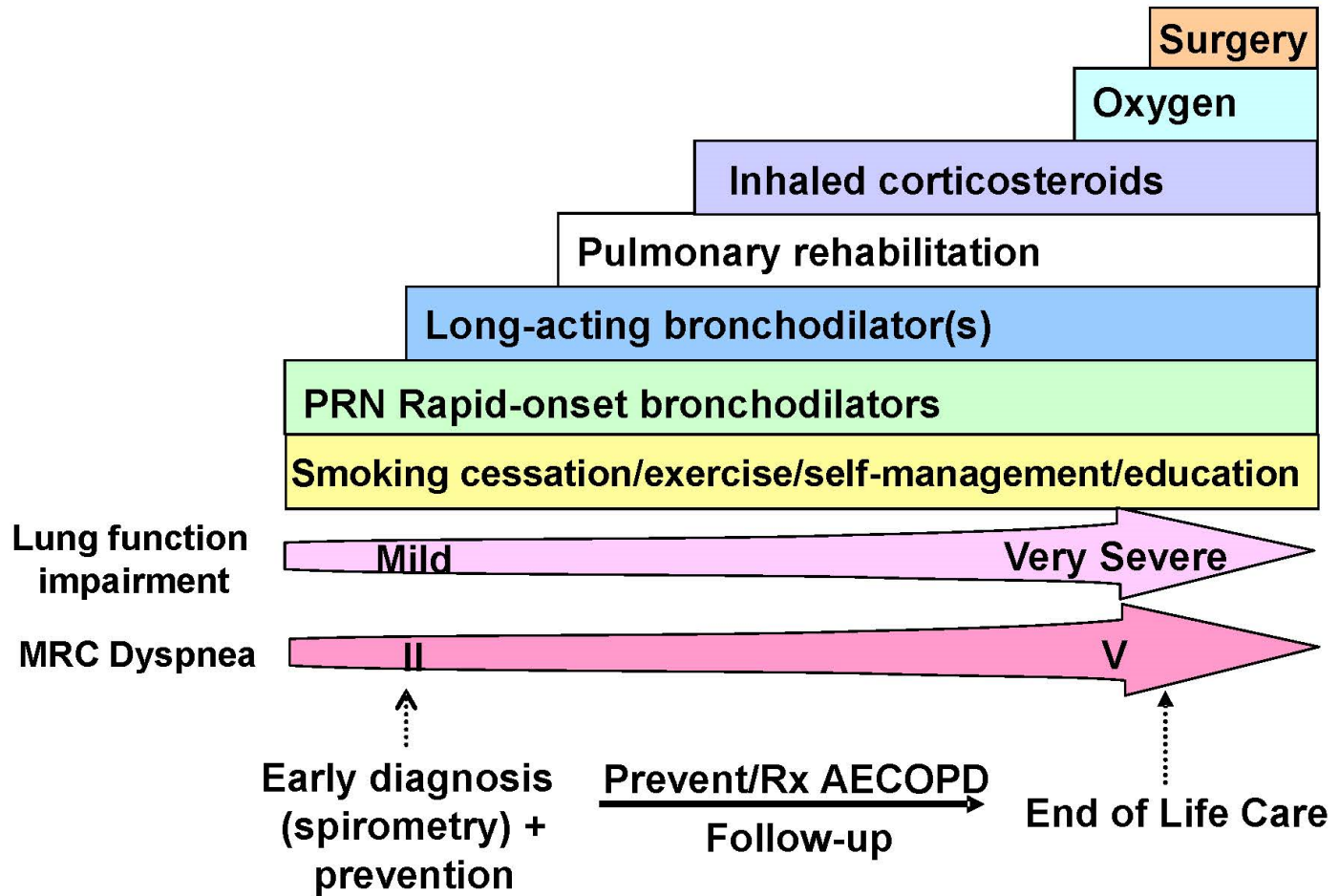
- progressive, **partially reversible** airway obstruction and lung hyperinflation
- systemic manifestations, co-morbidities
- increasing frequency and severity of exacerbations of COPD

Goals of Therapy

- **Relieve symptoms (SOB)**
 - Improve exercise tolerance
 - Improve health status and
 - Prevent disease progression
 - **Prevent and treat exacerbations**
 - Reduce mortality
- Reduce symptoms**
- Reduce risk**

- Individuals with COPD require long term follow up and reassessment
- About 50% of patients with COPD are non-adherent
- About 50% of patients cannot demonstrate appropriate inhaler technique. Re-evaluate inhaler technique regularly

Comprehensive Approach to the Management of COPD



O'Donnell DE, et al. Can Respir J 2007;14(Suppl B):5B-32B

COPD Inhaled Pharmacotherapy^{1,2}

SABA	SAMA (SAAC)	SAMA+ SABA	LABA	LAMA (LAAC)	LAMA+ LABA	ICS+ LABA
Salbutamol sulfate (Ventolin)	Ipratropium bromide (Atrovent)	Ipratropium bromide + Salbutamol sulfate (Combivent)	Salmeterol xinafoate (Serevent)	Tiotropium bromide (Spiriva) Handihaler and Respimat	Tiotropium + Olodaterol hydrochloride (Inspiroto)	Budesonide + Formoterol fumarate dihydrate (Symbicort)
Terbutaline sulfate (Bricanyl)			Indacaterol maleate (Onbrez)	Glycopyrronium bromide (Seebri Breezhaler)	Glycopyrronium bromide + Indacaterol maleate (Ultibro)	Fluticasone propionate + Salmeterol (Advair)
			Formoterol fumarate (Oxeze)	Aclidinium bromide (Tudorza)	Aclidinium bromide + Formoterol fumarate (Duaklir)	Fluticasone furoate + Vilanterol trifenate (Breo Ellipta)
				Umeclidinium bromide (Incruse Ellipta)	Umeclidinium + Vilanterol trifenate (Anoro Ellipta)	

1. O'Donnell DE et al. Can Respir J. 2008;15(Suppl A):1A-8A. . 2. Mclvor RA. <http://www.e-therapeutics.ca/search#>.

Short-Acting Bronchodilators

SABA



Salbutamol
Ventolin[®],
generics

SAMA



Ipratropium
Atrovent[®]

SAMA/SABA



Ipratropium/salbutamol
Combivent[®] Respimat

SABA - SAMA - SAMA/SABA

Parameter	Salbutamol Ventolin® Terbutaline Bricanyl®	Ipratropium bromide Atrovent®	Ipratropium /salbutamol Combivent® Respimat
Dose	Salb 100 mcg/pMDI Salb 200 mcg/Diskus Terbu 500 mcg/puff	20 mcg/ puff 2 puffs	20/100 mcg/inh 1 inhalation
Device	Salb Diskus & pMDI Terbutaline Turbuhaler	pMDI	Respimat®
Frequency	PRN, (Max 800 mcg/day)	PRN, up to QID (max 12 puff/d)	PRN up to 6 x/day
Onset	< 5 min	< 15min	< 5 min
Duration	4 - 6 hr	4 - 6 hr	4 - 6 hr

LABA-12hr

Parameter	Formoterol (O xeze®)	Salmeterol (Serevent)®
Dose	O = 6, 12 mcg/inh (max 48 mcg/day)	50 mcg/inh (max 100 mcg/day)
Device	Oxeze Turbuhaler	Diskus
Frequency	BID (with ICS in asthma)	BID (with ICS in asthma)
Onset	< 5min	10-20 min
Duration	>12 hr	>12 hr
ICS/LABA combo	Symbicort Turbuhaler® 100/6 200/6	Advair® Diskus 50 mcg Advair® pMDI 25 mcg

24-hr Acting LABA



Ultra-LABAs- 24hr

Parameter	Indacaterol Onbrez [®] Breezhaler [®]	Vilanterol (component)	Olodaterol (component)
Dose/ Frequency	75 mcg capsule 1 inhalation Daily	25 mcg/ inhal'n 1 inhal Daily	2.5 mcg/inhal'n 2 inh Daily
Device	Breezhaler [®]	Ellipta [®]	Respimat [®]
Onset	< 5 min	< 5min	< 5 min
Duration	>24 hr	>24 hr	>24 hr
Size	10, 30 capsules	Not marketed as single agent	Not marketed as single agent
ODB	LU		
LAMA/LABA combo ICS/LABA	Ultibro Breezhaler [®]	Anoro Ellipta [®] Breo Ellipta [®]	Inspiolto Respimat [®]

Long-Acting Muscarinic Antagonists (LAMA) [Anticholinergics]



Tiotropium
Spiriva Handihaler®



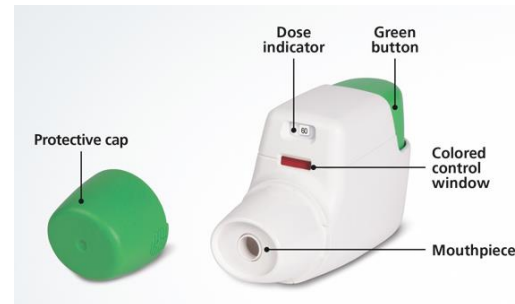
Tiotropium
Spiriva Respimat®



Glycopyrronium
Seebri Breezhaler®



Umeclidinium
Incruse Ellipta®



Aclidinium
Tudorza Genuair®

Comparison of LAMAs

Parameter	Tiotropium	Aclidinium	Glycopyrronium	Umeclidinium
Dose/ Frequency	18 capsule or 5 mcg SMI Daily	400 mcg BID	50 mcg capsule Daily	62.5 mcg Daily
Device	Handihaler & Respimat SMI	Genuair preloaded	Breezhaler	Ellipta preloaded
Onset	30-80 min	30 min	5 min	30-60 min
Duration	24-36 hr	12 hr	>24 hr	>24 hr
Renal elim	Yes, major*	No	Yes*	Yes, minor
Metabolism	Unchanged	Hydrolized	CYP 2D6	CYP 2D6
ODB	Yes	Yes	Yes	Yes
Combo with LABA	Yes	Yes	Yes	Yes

* Monitor or use with caution in severe renal impairment

Combination LAMA/LABAs



Glycopyrronium/Indacaterol
Ultibro Breezhaler®



Tiotropium/Olodaterol
Inspiolto Respimat®



Umeclidinium/Vilanterol
Anoro Ellipta®



Aclidinium/ Formoterol
Duaklir Genuair®

Comparison of LAMA/LABAs

Parameter	Tiotropium/ Olodaterol	Aclidinium/ Formoterol	Glycopyrronim /Indacaterol	Umeclidinium /Milanterol
Trade Name	Inspiro [®] Respimat	Duaklir [®] Genuair	Ultibro [®] Breezhaler	Anoro [®] Ellipta
Dose/ Frequency	2.5/2.5 mcg 2 inhalations Daily	400/12 mcg 1 inhalation BID	50/ 110 mcg 1 inhalation Daily	62.5/25 mcg 1 inhalation Daily
ODB	LU	LU	LU	LU

Combination ICS/LABA



Fluticasone **propionate**/
Salmeterol
Advair Diskus®



Fluticasone **furoate**/Vilanterol
Breo Ellipta®

Budesonide/Formoterol
Symbicort®



Mometasone/Formoterol
Zenhale®



Comparison of ICS/LABAs

Parameter	Fluticasone propionate/ Salmeterol	Budesonide /Formoterol	Mometasone/ Formoterol	Fluticasone furoate/ Vilanterol
Trade Name	Advair® Diskus, pMDI	Symbicort® Turbuhaler	Zenhale® pMDI	Breo® Ellipta
Dose/ Frequency	100/50, 250/50, 500/50 1 inh BID 125/25 250/25 2 puffs BID	100/6, 200/6 1 inh BID	100/5, 200/5 2 puffs BID	100/25 mcg 1 inh Daily 200/25 (for asthma)
ODB	LU	LU	LU	LU

Always remember to discuss.....

- Non- pharmacological management considerations such as smoking cessation, vaccination, client education, physical activity and pulmonary rehab.
- Review treatment plan at each visit , addressing medication efficacy.
- Review inhaler technique.