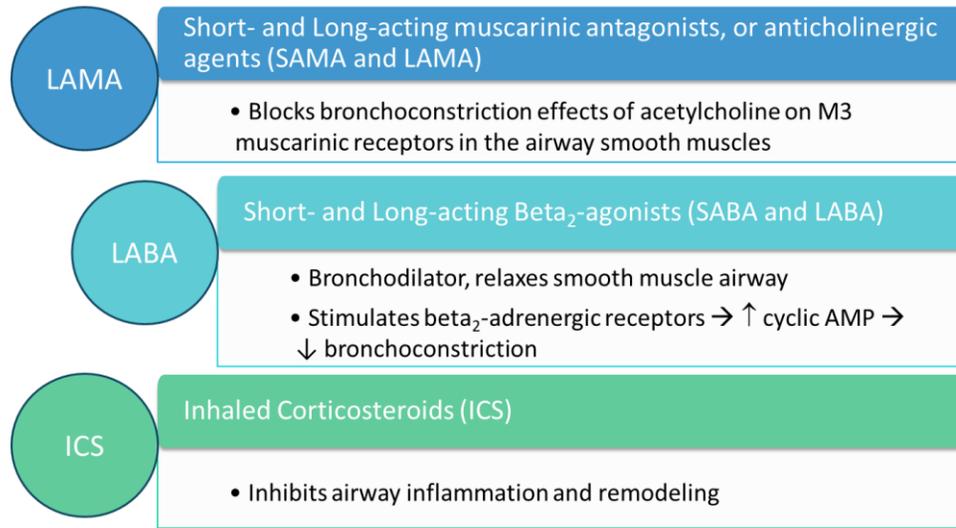


Inhaler Therapies for Respiratory Conditions



MDI Metered-dose Inhaler

- Slow, steady breath
- Requires hand-breath coordination (Press canister for actuation)
- E.g. HFA



DPI Dry Powder Inhaler

- Does not require hand-breath coordination
- Requires deep, forceful breath
- E.g. Diskus, Handihaler, Flexhaler, Ellipta



BAI Breath Actuated Inhaler

- Breath actuated, does not require hand-breath coordination
- Steady, moderate breath
- E.g. Redihaler



SMI Soft Mist Inhaler

- Slow, steady breath
- Requires twisting to prepare dose
- E.g. Respimat



CLASS SHORT- AND LONG-ACTING MUSCARINIC ANTAGONISTS, OR ANTICHOLINERGIC AGENTS (SAMA OR LAMA)					
MECHANISM	Blocks bronchoconstriction effects of acetylcholine on M3 muscarinic receptors in the airway smooth muscles				
INHALER BRAND (GENERIC)	Atrovent HFA (ipratropium)	Spiriva Respimat (tiotropium)	Spiriva Handihaler (tiotropium)	Incruse Ellipta (umeclidinium)	Tudorza PressAir (aclidinium)
DEVICE	MDI 	SMI 	DPI 	DPI 	DPI 
INPATIENT FORMULARY	X	✓	X	X	X
COUNSELING POINTS	-Short acting -Rescue inhaler, PRN -Hand-breath coordination required (press canister after you start inhaling, slow steady breath)	-Long acting -Use every day, once daily -2 puffs = 1 dose -Twist & prime for use -Refill when dose indicator is red	-Long acting -Use every day, once daily -2 breaths = 1 dose -Wash hands after use -Do not swallow capsule -Refill when red appears in dose indicator window	-Long acting -Use every day, 1 breath once daily -30 doses per inhaler, refill when ~10 left -Single-step dose activation (by opening cover)	-Long acting -Use every day, twice daily -60 doses, refill when red band appears in dose indicator window
STEPS FOR USE	-Remove green cap -Exhale -Seal lips around mouthpiece -Breathe in slowly and press canister down -Hold breath ~10 seconds -Wait and repeat if needed -Replace cap	-First use: remove clear base, insert cartridge (will click), replace clear base -Prime: turn until click, open cap, press dose release button towards ground, repeat 4x -Daily use: turn until click, open cap, seal lips around mouthpiece, press dose release button while taking a slow, deep breath, close cap	-Open lid -Open mouthpiece -Place capsule inside -Close mouthpiece -Press green piercing button, only once -Breathe out -Seal lips around mouthpiece -Inhale deeply -Hold breath then exhale -Wait then repeat -Empty capsule into trash, without touching it	-Open cover until it clicks -Exhale -Seal lips around mouthpiece -Take 1 long, deep, steady breath -Do not block vent -Hold breath 3-4 seconds -Exhale slowly -Close cover -Can clean with dry cloth	-Squeeze and remove protective green cap -Press the green button down to load dose (red control window now green) -Breathe out -Seal lips around mouthpiece -Take a deep, forceful breath in, should hear a "click," continue inhaling -Remove inhaler and hold breath -Exhale slowly
BARRIERS	-Hand-breath coordination required	-Deep, forceful breath -Access, cost -Anticholinergic side effects	-Deep, forceful breath -Access -Anticholinergic side effects	-Deep, forceful breath -Access, cost -Anticholinergic side effects	-Deep, forceful breath -Access, cost -Anticholinergic side effects

CLASS			
SHORT- AND LONG-ACTING BETA AGONISTS (SABA OR LABA)			
MECHANISM	Bronchodilator, relaxes smooth muscle airway Stimulates beta ₂ -adrenergic receptors → ↑ cyclic AMP → ↓ bronchoconstriction		
INHALER BRAND (GENERIC)	Ventolin HFA (albuterol)	Xopenex HFA (levalbuterol)	Serevent diskus (salmeterol)
DEVICE	MDI 	MDI 	DPI 
INPATIENT FORMULARY	✓	✗	✓
COUNSELING POINTS	-Short acting -Rescue inhaler, PRN -200 or 60 dose sizes (+4 for priming) -Rinse to clean every week, air dry overnight	-Short acting, typically used when ↑HR with albuterol -Rescue inhaler, PRN	-Long acting -Use every day, 1 inhalation twice daily -Should not use LABA monotherapy for asthma -60 doses, refill when 5 left
STEPS FOR USE	-Prime before first use: squeeze and remove cap, shake inhaler well, spray, repeat 4 times -Remove cap -Exhale -Seal lips around mouthpiece -Breathe in deep, slowly and press canister down -Hold breath ~10 seconds -Wait 1 minute and repeat if needed -Replace cap	-Remove cap -Exhale -Seal lips around mouthpiece -Breathe in slowly and press canister down -Hold breath ~10 seconds -Wait and repeat if needed -Replace cap	-Open diskus -Slide lever until it clicks -Exhale -Seal lips around mouthpiece -Inhale quickly and deeply -Hold breath ~10 seconds -Close diskus -Repeat in 12 hours
BARRIERS	-Hand-breath coordination required	-Hand-breath coordination required	-Deep, forceful breath required

CLASS					
INHALED CORTICOSTEROIDS (ICS)					
MECHANISM	Inhibits airway inflammation and remodeling				
INHALER BRAND (GENERIC)	Pulmicort Flexhaler (budesonide)	Flovent Diskus (fluticasone propionate)	Asmanex Twisthaler (mometasone furoate)	Flovent HFA (fluticasone propionate)	QVAR Redihaler (beclomethasone dipropionate)
DEVICE	DPI 	DPI 	DPI 	MDI 	Breath actuated MDI 
INPATIENT FORMULARY	✓	✓	X	X	X
COUNSELING POINTS	-Use every day -Rinse mouth out after	-Use every day, 1 inhalation twice daily -Rinse mouth out after -60 doses, refill when 5 left	-Use every day -Rinse mouth out after	-Use every day -Rinse mouth out after -120 doses (+4 for priming)	-Use every day -Rinse mouth out after -120 doses (+4 for priming)
STEPS FOR USE	-Prime inhaler: hold brown grip, turn and lift white cover, turn brown grip in one direction then other all the way (will “click”) -Daily use: turn and lift white cover, turn brown grip one way then other to “click”, exhale, seal lips around mouthpiece, inhale deeply and forcefully, remove inhaler and exhale, repeat if needed, close cover, rinse mouth out after	-Open diskus -Slide lever until it clicks -Exhale -Seal lips around mouthpiece -Inhale quickly and deeply -Hold breath ~10 seconds -Close diskus -Rinse mouth out after -Repeat in 12 hours	-Hold base and twist cover counterclockwise to lift off - Exhale -Hold inhaler horizontally, seal lips around mouthpiece - Take quick, forceful, deep breath -Hold for 10 seconds -Exhale -Wipe mouthpiece with dry cloth and close cover -Rinse mouth out after	-Prime: squeeze and remove cap, shake inhaler well, spray, repeat 4 times -Remove cap, exhale -Seal lips around mouthpiece -Breath in deep, slowly and press canister down -Hold breath ~10 seconds then exhale -Wait 30 seconds between doses and replace cap -Rinse mouth out after	-Remove Cap -Hold upright, shake well -Breathe out gently -Seal lips around mouthpiece -Inhale with steady, moderate force for at least 5 seconds -Hold breath for 10 seconds -Wait 1 min between doses -Rinse mouth out after
BARRIERS	-Deep, forceful breath required	-Deep, forceful breath required	-Deep, forceful breath required	-Hand breath coordination -Shake well	-Shake well, prime -Form good seal

CLASS		COMBINATION THERAPY LAMA+LABA			
MECHANISM	Blocks bronchoconstriction effects of acetylcholine on M3 muscarinic receptors in the airway smooth muscles + Bronchodilator, relaxes smooth muscle airway: Stimulates beta ₂ -adrenergic receptors → ↑ cyclic AMP → ↓ bronchoconstriction				
INHALER BRAND (GENERIC)	Anoro Ellipta (umeclidinium and vilanterol)	Duaklir Pressair (aclidinium bromide + formoterol fumarate)	Stiolto Respimat (tiotropium bromide + olodaterol)	Bevespi Aerosphere (glycopyrronium bromide + formoterol fumarate)	
DEVICE	DPI 	DPI 	SMI 	pMDI 	
INPATIENT FORMULARY	X		X		X
COUNSELING POINTS	-2 medicines in 1 inhaler -Use every day -No hand-breath coordination -Single-step dose activation (by opening cover, dose is ready) -Refill when 10 doses left (red appears in dose counter window)	-Long acting -2 medicines in 1 inhaler -Use every day, twice daily -60 doses, refill when red band appears in dose indicator window	-Long acting -2 breaths = 1 dose -Use every day - 2 medicines in 1 inhaler -Twist and prime to use	-Long acting -2 medicines in 1 inhaler -Use 2 puffs twice a day, every day -120 doses, refill when 20 doses left (red in dose indicator window) -Shake well, prime before use -Rinse to clean every week	
STEPS FOR USE	-Open cover until it clicks -Exhale -Seal lips around mouthpiece -Take 1 long, deep, steady breath -Do not block vent -Hold breath 3-4 seconds -Exhale slowly -Close cover -Can clean with dry cloth	-Squeeze and remove protective orange cap -Press the orange button down to load dose (red control window will turn green to show dose is ready) -Breathe out -Seal lips around mouthpiece -Take a deep, forceful breath in, will “click,” continue inhaling -Remove inhaler and hold breath -Exhale slowly	-First use: remove clear base, insert cartridge (will click), replace clear base -Prime: turn until click, open cap, press dose release button towards ground, repeat 4x - Daily use: turn until click, open cap until it snaps, seal lips around mouthpiece, press dose release button while taking a slow, deep breath, close cap	-Prime before first use -Open cap and shake well before each use -Breathe out -Seal lips around mouthpiece -Tilt head back -Breathe in deeply and slowly while pressing canister down -Hold 10 seconds then exhale -Repeat -Close cap	
BARRIERS	-Access, check coverage		-Access, check coverage		-Access, check coverage

CLASS		COMBINATION THERAPY LABA+ICS				
MECHANISM	Bronchodilator, relaxes smooth muscle airway Stimulates beta ₂ -adrenergic receptors → ↑ cyclic AMP → ↓ bronchoconstriction + Inhibits airway inflammation and remodeling					
INHALER BRAND (GENERIC)	Advair Diskus (fluticasone propionate + salmeterol)	Breo Ellipta (fluticasone furoate + vilanterol)	Wixela Inhub (fluticasone propionate + salmeterol)	AirDuo RespiClick (fluticasone propionate + salmeterol)	Symbicort (budesonide + formoterol fumarate)	
DEVICE	DPI 	DPI 	DPI 	pMDI 	MDI 	
INPATIENT FORMULARY	X	X	X	X	✓	
COUNSELING POINTS	-Use every day, 1 inhalation twice daily -Rinse mouth out after -60 doses, refill when 5 left	-Use every day, 1 breath once daily -30 doses per inhaler, refill when 10 left -Single-step dose activation (by opening cover)	-Use every day, twice daily -Generic Advair -Rinse mouth out after -60 doses, refill when 9 left	-Use every day -Opening cap releases dose -If you are taking 2 doses, close cap and reopen to release another dose -Refill when 20 doses left (red in dose indicator)	-Use every day, twice daily -Rinse mouth out after -Can use with a spacer if needed -Requires hand-breath coordination	
STEPS FOR USE	-Open diskus -Slide lever until it clicks -Exhale -Seal lips around mouthpiece -Inhale quickly and deeply -Hold breath ~10 seconds -Close diskus -Rinse mouth out after -Repeat in 12 hours	-Open cover until it clicks -Exhale -Seal lips around mouthpiece -Take 1 deep, steady breath -Do not block vent -Hold breath 3-4 seconds -Exhale slowly -Close cover -Rinse mouth out after -Can clean with dry cloth	-Lower mouthpiece top to bottom -Push yellow lever down to hear click -Breathe out -Seal lips around mouthpiece -Breathe in quickly, deeply -Hold 10 seconds -Breathe out slowly -Close mouthpiece	-Open cap to release dose, will "click" -Exhale -Seal lips around mouthpiece -Do not block vent -Breathe in quickly and deeply -Hold breath 10 seconds -Exhale, close yellow cap -Rinse mouth out after	-Remove cap, shake well -Breathe out gently -Seal lips around mouthpiece -Slowly and steadily inhale while pressing down on canister -Hold breath for 10 seconds -Wait 1 min between doses -Rinse mouth out after	
BARRIERS	-Deep, forceful breath required	-Access, check coverage -Deep, forceful breath	-Deep, forceful breath	-Access, check coverage	-Can use with spacer -Hand-breath coordination	

CLASS		COMBINATION THERAPY LAMA+LABA+ICS	
MECHANISM	Blocks bronchoconstriction effects of acetylcholine on M3 muscarinic receptors in the airway smooth muscles + Bronchodilator, relaxes smooth muscle airway: Stimulates beta ₂ -adrenergic receptors → ↑ cyclic AMP → ↓ bronchoconstriction + Inhibits airway inflammation and remodeling		
INHALER BRAND (GENERIC)	Trelegy Ellipta (fluticasone furoate + umeclidinium + vilanterol)	Breztri Aerosphere (budesonide + glycopyrrolate + formoterol fumarate)	
DEVICE	DPI 	pMDI 	
INPATIENT FORMULARY	X		X
COUNSELING POINTS	<ul style="list-style-type: none"> -Use every day, once daily -3 medicine classes in 1 inhaler -Rinse mouth out after due to steroid component -Refill <10 doses left 		<ul style="list-style-type: none"> -Use every day, 2 inhalations twice daily -3 medicine classes in 1 inhaler -Rinse mouth out after due to steroid component
STEPS FOR USE	<ul style="list-style-type: none"> -Open the cover, “click” -Breathe out -Inhale steady, deep breath -Hold for ~5 seconds -Breathe out slowly -Close the inhaler -Rinse mouth & spit out after 		<ul style="list-style-type: none"> -Remove the cap of the inhaler -Shake -Breathe out -Seal lips around mouthpiece -Breathe in deep and slowly while pressing down on the canister -Hold for ~10 seconds -Breathe out -Repeat for second breath -Close the inhaler -Rinse mouth & spit out after
BARRIERS	<ul style="list-style-type: none"> -Cost, check coverage -Deep, forceful breath required 		<ul style="list-style-type: none"> -Cost, check coverage -Hand-mouth coordination required

