

CYSTIC FIBROSIS TREATMENTS

The Cystic Fibrosis (CF) Foundation established the Pulmonary Clinical Practice Guidelines Committee to assist healthcare providers with the use of chronic medications for the maintenance of lung health in CF patients. Since the 2007 publication of the guidelines, several novel medications have been approved for use in the US and additional data have been published on therapies previously reviewed. The committee conducted an assessment of the current evidence to develop updated recommendations on the use of currently available chronic treatments for CF lung disease.

Generic	Brand	Strength	Form	Dose
ANTIBIOTICS				
azithromycin	Zithromax	250mg, 500mg	tabs	Adults and Children: ≥6yrs (18–35kg): 250mg 3 times weekly (MWF); (≥36kg): 500mg 3 times weekly (MWF).
aztreonam	Cayston	75mg	pwd for inh via nebulization	Adults and Children: <7yrs: Not established. Use a short-acting bronchodilator 15mins–4hrs before each dose; or a long-acting bronchodilator 30mins–12hrs before starting therapy. ≥7yrs: 75mg by nebulization 3 times daily (≥4hrs apart) for 28 days.
tobramycin	Tobi	300mg/5mL	soln for oral inh	Adults and Children: <6yrs: Not established. Give in alternate 28-day cycles (28 days on, 28 days off). ≥6yrs: 300mg via oral inh over 15mins twice daily, as close to every 12hrs as possible (must be ≥6hrs apart). Give last when using multiple inhalation therapies.
	Tobi Podhaler	28mg/cap	dry pwd for oral inh	Adults and Children: <6yrs: Not established. Give in alternate 28-day cycles (28 days on, 28 days off). ≥6yrs: Inhale contents of 4 caps with Podhaler device twice daily, as close to every 12hrs as possible (must be ≥6hrs apart). Give last when using multiple inhalation therapies.
NSAIDS¹				
ibuprofen	Advil	200mg	tabs, caps, caplets, liqui-gels	Adults: ≥18yrs: Insufficient data for chronic use. Children: 6–17yrs (FEV1 >60% predicted): 20–30mg/kg twice daily; max 3200mg/day. Maintain peak plasma concentration of 50–100mcg/mL.
		100mg/5mL	susp	
	Motrin	200mg	tabs, caps, caplets, gelcaps	
		100mg/5mL	susp	
CFTR MODULATORS				
ivacaftor	Kalydeco²	150mg	tabs	Adults and Children: <4mos, 4–<6mos (with hepatic impairment and/or on concomitant moderate or strong CYP3A inhibitors): Not recommended. 4–<6mos (≥5kg): 25mg packet every 12hrs. 6mos–<6yrs (5–<7kg): 25mg packet every 12hrs; (7–<14kg): 50mg packet every 12hrs; (≥14kg): 75mg packet every 12hrs. ≥6yrs: 150mg tab every 12hrs. <i>Concomitant CYP3A inhibitors (≥6mos):</i> reduce to twice weekly (strong inhibitors) or once daily (moderate inhibitors). <i>Hepatic impairment (≥6mos):</i> reduce to once daily for moderate impairment, once daily or less frequently if severe.
		25mg, 50mg, 75mg; per packet	oral granules ³	
lumacaftor/ivacaftor	Orkambi²	100mg/125mg, 200mg/125mg	tabs	Adults: 2 tabs (200mg/125mg) every 12hrs. <i>Currently taking strong CYP3A inhibitors:</i> initially 1 tab (200mg/125mg) once daily for 1st week then continue with recommended daily dose. <i>Hepatic impairment (moderate):</i> 2 tabs in the AM and 1 tab in the PM; (severe): max 1 tab in the AM and 1 tab in the PM, or less; use with caution. Children: <2yrs: Not established. 2–5yrs (<14kg): 1 pkt (100mg/125mg) every 12hrs; (≥14kg): 1 pkt (150mg/188mg) every 12hrs. 6–11yrs: 2 tabs (100mg/125mg) every 12hrs. <i>Currently taking strong CYP3A inhibitors:</i> initially 1 tab once daily or 1 pkt every other day (2–5yrs) for 1st week then continue with recommended daily dose. <i>Hepatic impairment: 2–5yrs (moderate):</i> 1 pkt in the AM and 1 pkt every other day in the PM; (severe): max 1 pkt in the AM, or less; ≥6yrs (moderate): 2 tabs in the AM and 1 tab in the PM; (severe): max 1 tab in the AM and 1 tab in the PM, or less; all: use with caution.
		100mg/125mg, 150mg/188mg; per packet	oral granules ³	
tezacaftor/ivacaftor + ivacaftor	Symdeko²	50mg/75mg + 75mg, 100mg/150mg + 150mg	tabs	Adults and Children: <6yrs: Not established. 6–<12yrs (<30kg): 1 tab (50mg/75mg) in the AM and 1 tab (75mg) in the PM, approx. 12hrs apart; 6–<12yrs (≥30kg) or ≥12yrs: 1 tab (100mg/150mg) in the AM and 1 tab (150mg) in the PM, approx. 12hrs apart. <i>Concomitant moderate CYP3A inhibitors (6–<12yrs [<30kg]):</i> alternate 1 tab (50mg/75mg) in the AM or 1 tab (75mg) in the AM every other day; (6–<12yrs [≥30kg]) or ≥12yrs: alternate 1 tab (100mg/150mg) in the AM or 1 tab (150mg) in the AM every other day. <i>Concomitant strong CYP3A inhibitors (6–<12yrs [<30kg]):</i> 1 tab (50mg/75mg) in the AM twice weekly, approx. 3–4 days apart; (6–<12yrs [≥30kg]) or ≥12yrs: 1 tab (100mg/150mg) in the AM twice weekly, approx. 3–4 days apart. <i>Moderate hepatic impairment (6–<12yrs [<30kg]):</i> 1 tab (50mg/75mg) once daily, or less frequently if severe; (6–<12yrs [≥30kg]) or ≥12yrs: 1 tab (100mg/150mg) once daily, or less frequently if severe.
elexacaftor/tezacaftor/ivacaftor + ivacaftor	Trikafta²	50mg/25mg/37.5mg + 75mg, 100mg/50mg/75mg + 150mg	tabs	Adults and Children: <6yrs: Not established. 6–<12yrs (<30kg): 2 tabs (50mg/25mg/37.5mg) in the AM and 1 tab (ivacaftor 75mg) in the PM, approx. 12hrs apart; (≥30kg): 2 tabs (100mg/50mg/75mg) in the AM and 1 tab (ivacaftor 150mg) in the PM, approx. 12hrs apart. ≥12yrs: 2 tabs (100mg/50mg/75mg) in the AM and 1 tab (ivacaftor 150mg) in the PM, approx. 12hrs apart.
MUCOLYTICS				
dornase alfa	Pulmozyme	1mg/mL	soln for oral inh	Adults and Children: <3mos: Not recommended. <5yrs: use only if there is a potential for benefit in pulmonary function or in risk of RTI. >5yrs: 2.5mg once daily via nebulization; some patients may benefit from twice daily.
hypertonic saline	—	3%, 7%	soln for oral inh	Adults and Children: <6yrs: Not established. ≥6yrs: 4mL/dose via nebulization twice daily.
mannitol	Bronchitol	40mg/cap	dry pwd for oral inh	Adults: Perform Bronchitol Tolerant Test (BTT) prior to administration. Use a short-acting bronchodilator 5–15mins before each dose. <i>Add-on treatment:</i> 400mg (10 caps) twice daily (AM & PM) via provided inhaler; PM dose should be ≥2–3hrs before bedtime. Children: <18yrs: Not established.

NOTES

Key: CFTR = cystic fibrosis transmembrane conductance regulator; inh = inhalation; MWF = monday, wednesday, friday; NSAIDS = Nonsteroidal anti-inflammatory drugs; pkt = packet; pwd = powder; RTI = respiratory tract infection

¹ The guidelines recommended the use of ibuprofen to prevent the loss of lung function in patients with FEV1 >60% predicted. The Committee updated the guidelines to limit the use of ibuprofen to only children aged 6–17yrs.

² Take with fat-containing food (eg, eggs, avocados, nuts, butter, peanut butter, cheese pizza, whole-milk dairy products).

³ Mix oral granules with 1 tsp (5mL) of soft-food or liquid (eg, yogurt, applesauce, milk, or juice) and completely consume.

REFERENCE

DeSimone E, Tilleman J, Giles ME, Mousa B. Cystic Fibrosis: Update on Treatment Guidelines and New Recommendations. *US Pharm.* 2018;43(5):16–21.

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