Sleep Medicine and Chronic Lung Care

GOLD and GINA step-up and step-down, CF care, rehab and quitting, home oxygen, sleep studies, PAP troubleshooting and central apnea

COPD: GOLD 2026 GROUPS AND FIRST TREATMENT

GROUP	WHO	START WITH
A	No moderate or severe exacerbation last year; mMRC 0–1, CAAT under 10	One bronchodilator
B	No exacerbation; mMRC 2 or more, CAAT 10 or more	LABA + LAMA, one inhaler
E	1 or more moderate or severe exacerbations last year	LABA + LAMA; add ICS if eosinophils ≥300/µL

Also at the first visit: smoking status, eosinophil count, alpha-1 antitrypsin level, comorbidities, vaccines, written action plan.

COPD FOLLOW-UP: ADJUST, ADD OR REMOVE

- Before adding a drug: check technique, adherence and cost, exposures and other causes of dyspnea.
- Dyspnea: LABA + LAMA, then switch device or molecule, rehab, consider ensifentrine.
- Exacerbations on LABA + LAMA: add ICS if eosinophils ≥100; under 100, roflumilast (FEV_1 under 50% with chronic bronchitis) or azithromycin (preferably former smokers).
- Still exacerbating on triple therapy with eosinophils ≥300: biologic (dupilumab with chronic bronchitis, or mepolizumab).
- ICS argued against by repeated pneumonia, eosinophils under 100 or mycobacterial infection.
- Persistent $PaCO_2$ over 53 mm Hg after an admission: consider home NIV.

ASTHMA: GINA TRACKS, CONTROL AND STEPS

STEP	TRACK 1: ICS–FORMOTEROL RELIEVER	TRACK 2: SABA RELIEVER
1–2	As-needed low-dose ICS–formoterol	ICS whenever SABA is taken, then daily low-dose ICS
3	Low-dose maintenance-and-reliever (MART)	Daily low-dose ICS–LABA
4	Medium-dose MART	Daily ICS–LABA, higher dose
5	Add LAMA; phenotype; biologic	Same

- Never SABA alone; never LABA without ICS.
- Control (4 weeks): daytime symptoms or reliever over twice a week, any night waking, any activity limit. None well controlled, 1–2 partly, 3–4 uncontrolled.
- Step up only after checking technique, adherence, triggers and comorbidities. Step down after 2–3 months of good control; do not stop ICS.

CHOOSING AN INHALER

- DPI: needs a forceful, deep breath. MDI and soft mist: slow, deep breath with timing; add a valved spacer if unsure.
- Cannot use any handheld device: nebulizer. Keep device types few; do not switch without teaching.
- Step-by-step technique: see PFTs and Oxygen Delivery.

CYSTIC FIBROSIS OUTPATIENT CARE

TOPIC	RULE
Sweat chloride	60 mmol/L or more CF; 30–59 test further; under 30 unlikely
Elexacaftor–tezacaftor–ivacaftor	Age 2 and up with a responsive variant; fixes the protein; with fatty food; liver tests monthly for 6 months
Airway clearance	Regularly, every patient; no technique is best; exercise adds to it, never replaces it
Dornase alfa	Refrigerate; discard after 60 h total at room temperature; never mix
Inhaled mannitol	Adults; tolerance test first; SABA 5–15 min before each dose
Cross-infection	At least 2 m (6 ft) between people with CF; never share nebulizers

REHAB, QUITTING AND PREVENTION

- Pulmonary rehab: stable COPD, after a COPD admission, ILD. Walk distance and dyspnea improve; FEV_1 is not the target. 6MWD gain of about 25 m is meaningful.
- Tobacco: Ask, Advise, Assess, Assist, Arrange. Varenicline over patch or bupropion, even before the patient is ready; over 12 weeks. E-cigarettes are not a cessation aid.
- Vaccines: influenza yearly, COVID-19, pneumococcal (PCV20 or PCV21), RSV, Tdap, zoster.
- Lung cancer screening: age 50–80, 20 pack-years, smoking or quit within 15 years: yearly low-dose CT.

VAPING INJURY AND DUST DISEASES

CONDITION	CLUES	ACTION
EVALI	Vaping (THC, informal source); respiratory, GI and fever; bilateral opacities; no infection	Diagnosis of exclusion; admit if SpO_2 under 95%; steroids case by case; stop vaping
Asbestosis	Insulation, ship, brake work; lower-lobe fibrosis, pleural plaques, restriction, low DLCO	Supportive; quit smoking (cancer risk multiplies)
Silicosis	Sandblasting, stonecutting, quarry; upper-lobe nodules, eggshell hilar nodes	Yearly TB testing

HOME OXYGEN: WHO QUALIFIES

RULE	MEDICARE (NCD 240.2)	GOLD 2026
At rest	PaO_2 ≤55 mm Hg or SaO_2 ≤88%	PaO_2 ≤55 or SaO_2 under 88%
With end-organ signs	PaO_2 56–59 or SaO_2 89% plus edema, pulmonary hypertension or Hct over 56%	PaO_2 over 55 to under 60 plus pulmonary hypertension, heart failure or Hct over 55%
Sleep or exercise only	≤55 or ≤88% then, if awake values are higher	Not for moderate or exercise-only desaturation
Goal, recheck	ABG wins if tests disagree	SaO_2 ≥90%; recheck in 60–90 days

SLEEP STUDY: SIGNALS AND SCORING (ADULT)

SIGNAL	WHAT IT SCORES
EEG, eye and chin EMG	Sleep and arousals; sleep time is the AHI denominator
Oronasal thermal sensor	Apnea: fall of 90% or more for 10 s or longer
Nasal pressure	Hypopnea: fall of 30% or more for 10 s with a 3% desaturation or an arousal (Medicare: 4%)
Chest and abdominal belts	Effort on: obstructive. Effort absent: central. Both: mixed
SpO_2, ECG, leg EMG, position	Desaturation, arrhythmia, limb movement

AHI = (apneas + hypopneas) ÷ hours of sleep; RDI adds RERAs. Under 5 normal, 5 to under 15 mild, 15–30 moderate, over 30 severe.

WHICH SLEEP TEST

- STOP-Bang screens; no questionnaire diagnoses OSA.
- Uncomplicated, likely moderate to severe OSA: lab study or home test.
- Lab study instead: heart or lung disease, muscle weakness, hypoventilation, chronic opioids, stroke, severe insomnia.
- Home test negative, unclear or failed: lab study (home tests divide by recording time and miss arousals).
- Overnight oximetry: repeated dips suggest apnea (needs a sleep study); sustained low suggests hypoventilation.

PAP: START, ADHERENCE AND PROBLEMS

ISSUE	ACTION
Starting	Home auto-CPAP or lab titration; CPAP over bilevel for routine OSA
Adherence (Medicare)	4 h or more on 70% of nights, 30 days in a row, within 3 months
Dry or stuffy nose, dry mouth	Heated humidifier, nasal spray
Mouth leak	Chin strap or full-face mask
Claustrophobia	Nasal pillows, ramp, practice while awake
High residual AHI, good use and seal	Retitrate (weight gain)
Bloating	Stop and call the provider
PAP not tolerated	Custom oral appliance; hypoglossal nerve stimulation
Surgery	Bring CPAP; use it during recovery

CENTRAL APNEA AND HYPOVENTILATION

- Cheyne–Stokes: waxing and waning breaths with central apneas, mostly heart failure; $PaCO_2$ low-normal. Treat the heart failure first.
- AASM 2025: CPAP, oxygen, acetazolamide or phrenic stimulation; ASV only in experienced centers with close monitoring (harm in SERVE-HF at LVEF ≤45%); no bilevel without a backup rate.
- Central apneas that appear on CPAP: continue CPAP and recheck.
- Obesity hypoventilation, stable with severe OSA: CPAP first. After hypercapnic failure: home NIV.
- Oxygen alone treats neither obstruction nor hypoventilation.

Sources (31) are listed with links at icubasics.com/sheets/rt-sleep-chronic-outpatient.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. ICU Basics is an independent study aid not affiliated with any certifying body.