

Pulmonary Hypertension on Echo: Practical 1-Page Clinic Approach

For cardiology clinic/PA use when dyspnea + elevated pulmonary pressures on echo and no obvious HFrEF, severe HTN, or volume overload.

Your approach: optimize BP, rhythm, and volume status, then repeat a focused/limited echo is reasonable when pretest concern is low and RV findings are reassuring. Do not delay workup/referral if symptoms are significant, echo probability is intermediate-high, RV is abnormal, or CTEPH/PAH is possible.

1) Know What Echo Can and Cannot Diagnose

- Echo estimates probability of PH; it does not confirm PH or define the hemodynamic group.
- RHC confirms PH and classifies: mPAP >20 mmHg; then separate pre-capillary vs post-capillary using PAWP/PVR.
- Echo clues: TR velocity/RVSP, RV size/function, RA size, septal flattening, PA/RVOT findings, IVC/RAP estimate.
- Do not rely on RVSP alone if TR jet/RAP estimate is poor or discordant with symptoms.

2) First-Pass Clinic Triage

- History: dyspnea trajectory, syncope/presyncope, chest pain, edema, OSA symptoms, PE/DVT, CTD, liver disease, HIV, congenital heart disease, stimulant/meth use, chemo/radiation.
- Exam: JVP, edema/ascites, loud P2, RV heave, murmurs, hypoxia, crackles/wheezing.
- Baseline tests: ECG, CXR, BNP/NT-proBNP, CBC/CMP/TSH, pulse ox +/- ambulatory O2, review full echo for LV diastolic disease/LA size/valves.

Red Flags - Do Not Just Repeat Echo

- Syncope/presyncope, rapidly progressive dyspnea, exertional chest pain, resting hypoxia, low BP, signs of RV failure.
- Moderate-severe RV dilation/dysfunction, septal flattening, pericardial effusion, high TRV/RVSP, high BNP, or unexplained severe symptoms.

3) Correct Common Reversible/Left-Heart Driver

- Volume: diurese to euvolemia; reassess JVP/edema, weight, renal function, K/Mg.
- BP: treat uncontrolled systemic HTN and LV diastolic filling pressure contributors.
- Rhythm/rate: address AF/RVR, tachycardia-mediated filling pressure, bradycardia/chronotropic issues if clinically relevant.
- Valves/LHD: MR/MS/AS, LA enlargement, LVH, E/e' or diastolic dysfunction often suggest Group 2 PH.

When a Repeat Limited Echo Makes Sense

- Mild elevation or borderline RVSP/TRV, no RV dysfunction, symptoms mild/stable, and a clear modifiable driver was present.
- Repeat after BP/volume/rhythm are controlled and patient is euvolemic; compare TRV/RVSP, RV size/function, RA/IVC, septum.
- If pressures/RV abnormalities persist or symptoms remain unexplained, move to structured PH workup/referral.

4) Structured Workup if Persistent/Unexplained

- Rule out CTEPH: V/Q scan is preferred screening test; CTA can miss chronic distal disease.
- Lung/OSA: PFTs with DLCO, overnight oximetry or sleep study, CT chest if lung disease suspected.
- PAH-associated: ANA/CTD labs when indicated, HIV, hepatitis/liver disease, portal HTN, drug/toxin exposure.
- Exercise limitation: consider 6-minute walk, ambulatory O2, CPET if diagnosis remains unclear.

5) Management Principles While Evaluating

- Treat the likely underlying group: optimize HFrEF/LHD, BP, volume, valvular disease, lung disease, OSA, hypoxemia, PE/CTEPH pathway.
- Vaccines, smoking cessation, supervised activity/rehab as appropriate, avoid excess salt/volume, manage iron deficiency/anemia if present.
- Avoid empiric PAH vasodilators (PDE5i, ERA, prostacyclin, riociguat) until PH type is confirmed; they can worsen pulmonary edema in Group 2 disease.
- Anticoagulation is not routine for all PH; use for standard indications such as AF/VTE or CTEPH pathway.

6) When to Refer / RHC

- Intermediate/high echo probability of PH, persistent unexplained dyspnea, abnormal RV, suspected PAH or CTEPH, or discordant echo/clinical picture.
- RHC should measure RAP, RV/PA pressures, PAWP, CO/CI, PVR, O2 saturations; consider vasoreactivity testing only in select suspected idiopathic/heritable/drug-associated PAH.
- Refer to PH center when PAH/CTEPH is possible, RV dysfunction is present, or advanced therapy/CTEPH intervention may be needed.

Fast Algorithm

Echo elevated PASP/TRV + dyspnea
Check quality + RV findings + LHD/valves/volume/BP/rhythm
Low risk + reversible driver -> optimize -> repeat focused echo
Persistent, RV abnormal, or symptoms significant -> PH workup + RHC/referral
Always screen CTEPH with V/Q when PH remains unexplained

Guideline basis: 2022 ESC/ERS PH diagnostic framework; contemporary ASE right-heart/PH echo assessment. Clinic reference only - confirm diagnosis/classification with RHC when indicated.