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Appendix from Assad et al., "Hemodynamic evidence of vascular remodeling in combined post- and precapillary pulmonary hypertension" (Pulm. Circ., vol. 6, no. 3, p. 313)

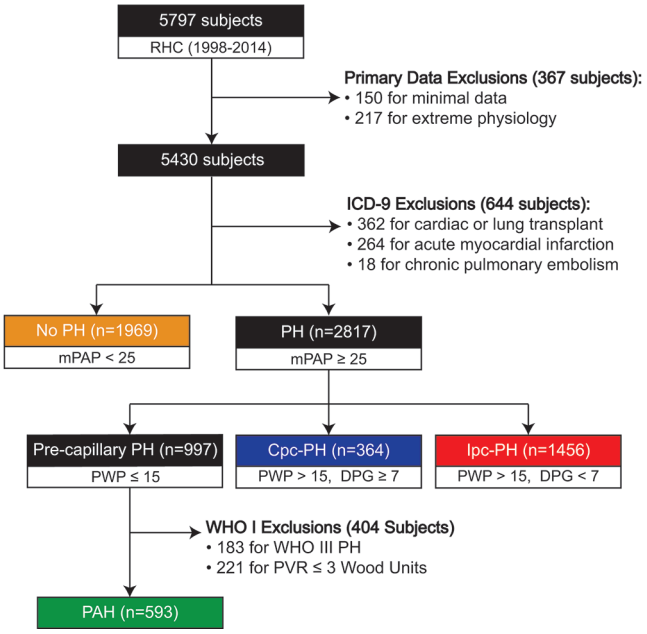

Figure S1. Flow diagram for cohort B. This schematic represents the initial data set and subsequent exclusions that led to our categorization of cohort B. The disease classification is based on the 2013 Nice World Health Symposium on Pulmonary Hypertension. All units are mmHg, unless stated otherwise. Cpc-PH: combined postcapillary and precapillary pulmonary hypertension; DPG: diastolic pulmonary artery–to–pulmonary wedge pressure gradient; ICD-9: *International Classification of Diseases, Ninth Revision*; Ipc-PH: isolated postcapillary pulmonary hypertension; mPAP: mean pulmonary artery pressure; PAH: pulmonary arterial hypertension; PH: pulmonary hypertension; PVR: pulmonary vascular resistance; PWP: pulmonary wedge pressure; RHC: right heart catheterization; WHO III PH: World Health Organization group 3–5 PH.

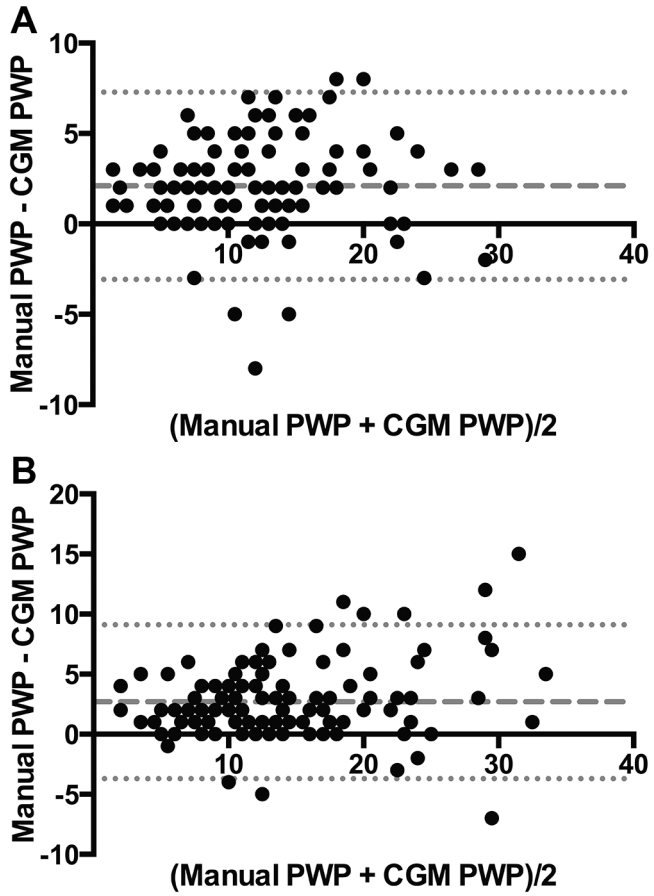

Figure S2. Different methods of estimating pulmonary wedge pressure (PWP) yield similar results. With Bland-Altman analysis, the manual and computer-generated mean (CGM) PWPs from 116 patients in cohort A demonstrated excellent agreement, with a slight underestimation of the CGM relative to the manual at baseline (−2.1 ± 2.6 mmHg; *A*) and after fluid challenge (−2.7 ± 3.3 mmHg; *B*).

Table S1. Exclusion and imputation thresholds for cohort B

	Removed and imputed value thresholds				Patient exclusion thresholds				Missing values	
Variable	Low	No.	High	No.	Low	No.	High	No.	No.	Imputed, %
Heart rate, beats/min	<30	25	>170	1	<40	26	>120	67	2,172	40.00
Systolic BP, mmHg[a]	<50	19	>255	2	<70	18	>210	1	507	9.34
Diastolic BP, mmHg[a]	<30	35	>145	0	<36	16	>120	0	584	10.76
RA pressure, mmHg[b]	None	. . .	>42	2	None	. . .	None	. . .	424	7.81
PA systolic pressure, mmHg[a]	<10	6	None	. . .	None	. . .	None	. . .	528	9.72
PA diastolic pressure, mmHg[a,b]	<−2	0	>80	3	None	. . .	None	. . .	524	9.65
PA mean pressure, mmHg[a,b]	<3	2	None	. . .	None	. . .	None	. . .	525	9.67
Mean PWP, mmHg	None	. . .	>53	1	None	. . .	None	. . .	509	9.37
CO, Fick, L/min	None	. . .	>13 by 1 method, <10 by the other	53[c]	<1.2	0	>13 by both methods	3[c]	991	18.25
CO, TD, L/min	None	. . .	Same as for Fick	53[c]	<1.2	2	Same as for Fick	3[c]	910	16.76
CI, Fick, L/min/m^2	None	. . .	>6.6 by 1 method, <5 by the other	44[c]	<0.8	6	>6.6 by both methods	2[c]	996	18.34
CI, TD, L/min/m^2	None	. . .	Same as for Fick	44[c]	<0.8	6	Same as for Fick	2[c]	966	17.79
SVR, dynes[d]	None	. . .	None	. . .	<285	11	>3,476	7	3,529	64.99
PVR, dynes[d]	0	9	None	. . .	None	. . .	>2,587	0	2,513	46.28
SVR, Wood units[d]	None	. . .	None	. . .	<4	10	>43	12	1,184	21.80
PVR, Wood units[d]	≤0	22	>40	2	None	. . .	>32	1	609	11.22
Aortic sat, %	<70	11	>100	7	None	. . .	None	. . .	1,495	27.53
RA sat, %	<22	6	None	. . .	None	. . .	None	. . .	2,485	45.76
PA sat, %	<23	5	None	. . .	None	. . .	>96	3	816	15.03
LV diastolic pressure, mmHg	None	. . .	>50	7	None	. . .	>39	16	2,646	48.73

Note: BP: blood pressure; CO: cardiac output; LV: left ventricular; PA: pulmonary artery; PVR: pulmonary vascular resistance; PWP: pulmonary wedge pressure; RA: right atrial; sat: saturation; SVR: systemic vascular resistance; TD: thermodilution.

[a] For pressures with a systolic and a diastolic component, the systolic pressure was required to be greater than the mean value (if present), and the mean value (or systolic value, if no mean) was required to be greater than the diastolic value. If these criteria were not met, then both values were deleted and imputed (BP: 4 patients; right ventricular pressure: 7; PA pressure: 6). If right ventricular systolic pressure was greater than PA systolic pressure by >30 mmHg, the patient was considered to have a left-to-right shunt. Of these, 4 patients were imputed, given confounding results, and 10 patients were excluded as true positives (right ventricular data not shown).

[b] Negative values were converted to 0 for RA pressure (22 patients), PA diastolic pressure (2), and mean PWP (1).

[c] Total number of patients affected by CO or CI high threshold.

[d] For resistance measurements in dynes and Wood units, if the number of dynes was not greater than the number of Wood units, both values were deleted and imputed (SVR: 4 patients; PVR: 2).

Table S2. Clinical and hemodynamic characteristics of patients with no PH in cohorts A and B

	Cohort A			
Category	Total	Before fluid challenge	After fluid challenge	Cohort B
Clinical characteristics				
Patients, no.	28			1,969
Age, mean, years	51 ± 15			60 ± 15
Sex, % female	89			47
Hemodynamic characteristics				
Heart rate, beats/min		77 ± 15	76 ± 14	73 ± 15
Mean arterial pressure, mmHg		95 ± 11	96 ± 14	89 ± 22
Right atrial pressure, mmHg		5 ± 4	7 ± 4	5 ± 4
Systolic PAP, mmHg		29 ± 10	36 ± 9	28 ± 7
Diastolic PAP, mmHg		12 ± 4	15 ± 6	10 ± 5
Pulmonary artery pulse pressure, mmHg		17 ± 7	20 ± 6	18 ± 6
Mean PAP, mmHg		17 ± 6	23 ± 6	18 ± 4
PWP, mmHg		8 ± 3	12 ± 4	9 ± 4
TPG, mmHg		9 ± 5	11 ± 6	8 ± 3
DPG, mmHg		3 ± 4	4 ± 5	1 ± 4
SVR, Wood units		14.1 ± 4.8	13.7 ± 4.4	16.6 ± 5.4
Pulmonary artery saturation, %		75 ± 8	75 ± 9	72 ± 8
Stroke volume, mL		93 ± 33	99 ± 40	86 ± 31
Cardiac output, L/min		7.0 ± 1.9	7.1 ± 1.8	6.0 ± 1.9
Cardiac index, L/min/m^2		3.6 ± 0.9	3.8 ± 1.0	3.2 ± 1.0
PVR, Wood units		1.4 ± 1.8	1.6 ± 0.9	1.7 ± 0.9
RVSWI, g/m^2/beat		3.8 ± 1.7	4.5 ± 2.2	4.5 ± 2.3
PVC, mL/mmHg		7.0 ± 6.2	5.2 ± 2.5	5.4 ± 2.9
RC time, seconds		0.46 ± 0.34	0.44 ± 0.18	0.49 ± 0.29

Note: DPG: diastolic pulmonary artery pressure–to–pulmonary wedge pressure gradient; PAP: pulmonary arterial pressure; PH: pulmonary hypertension; PVC: pulmonary vascular compliance; PVR: pulmonary vascular resistance; PWP: pulmonary wedge pressure; RC time: resistance-compliance time; RVSWI: right ventricular stroke work index; SVR: systemic vascular resistance; TPG: transpulmonary gradient.