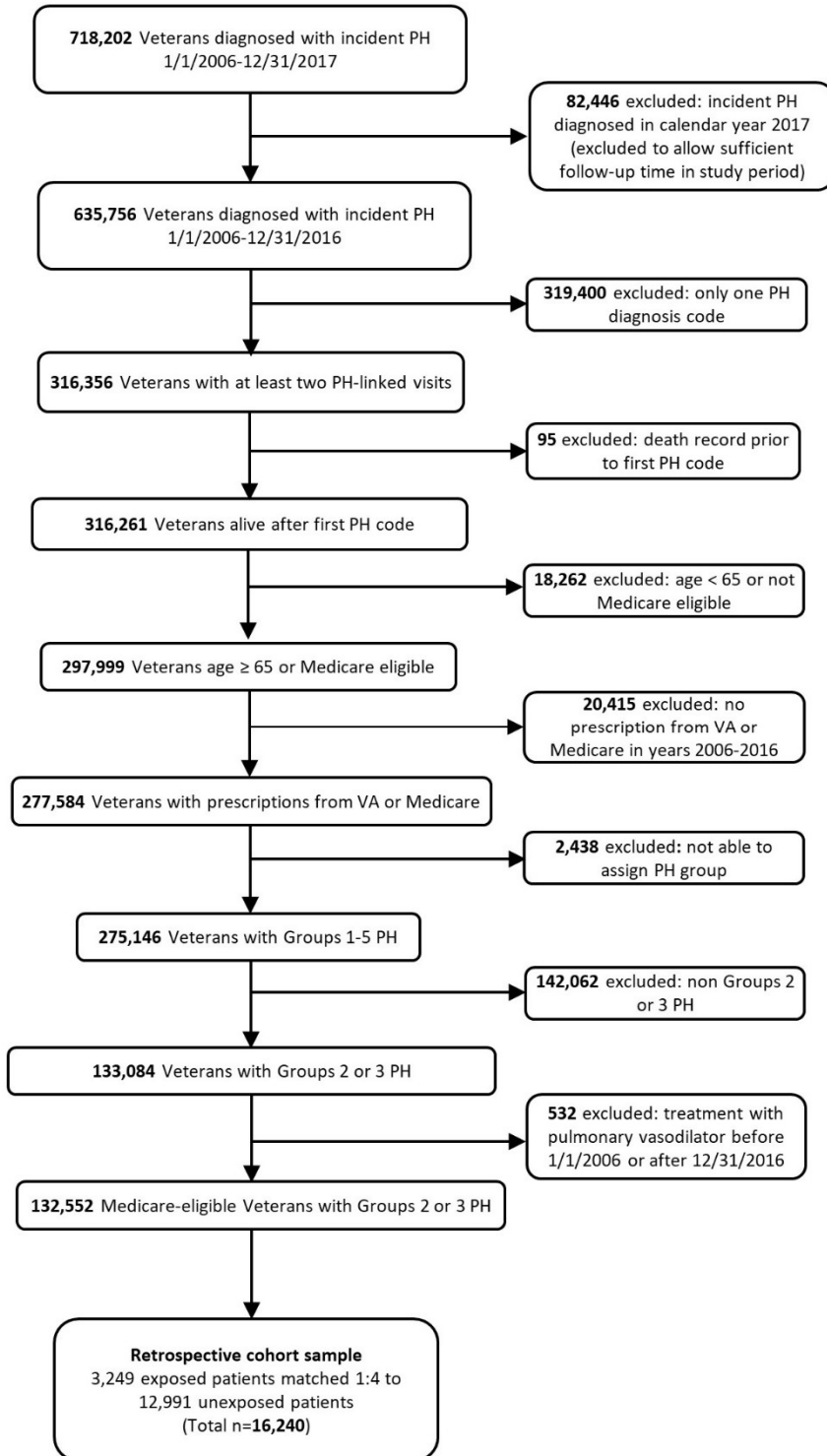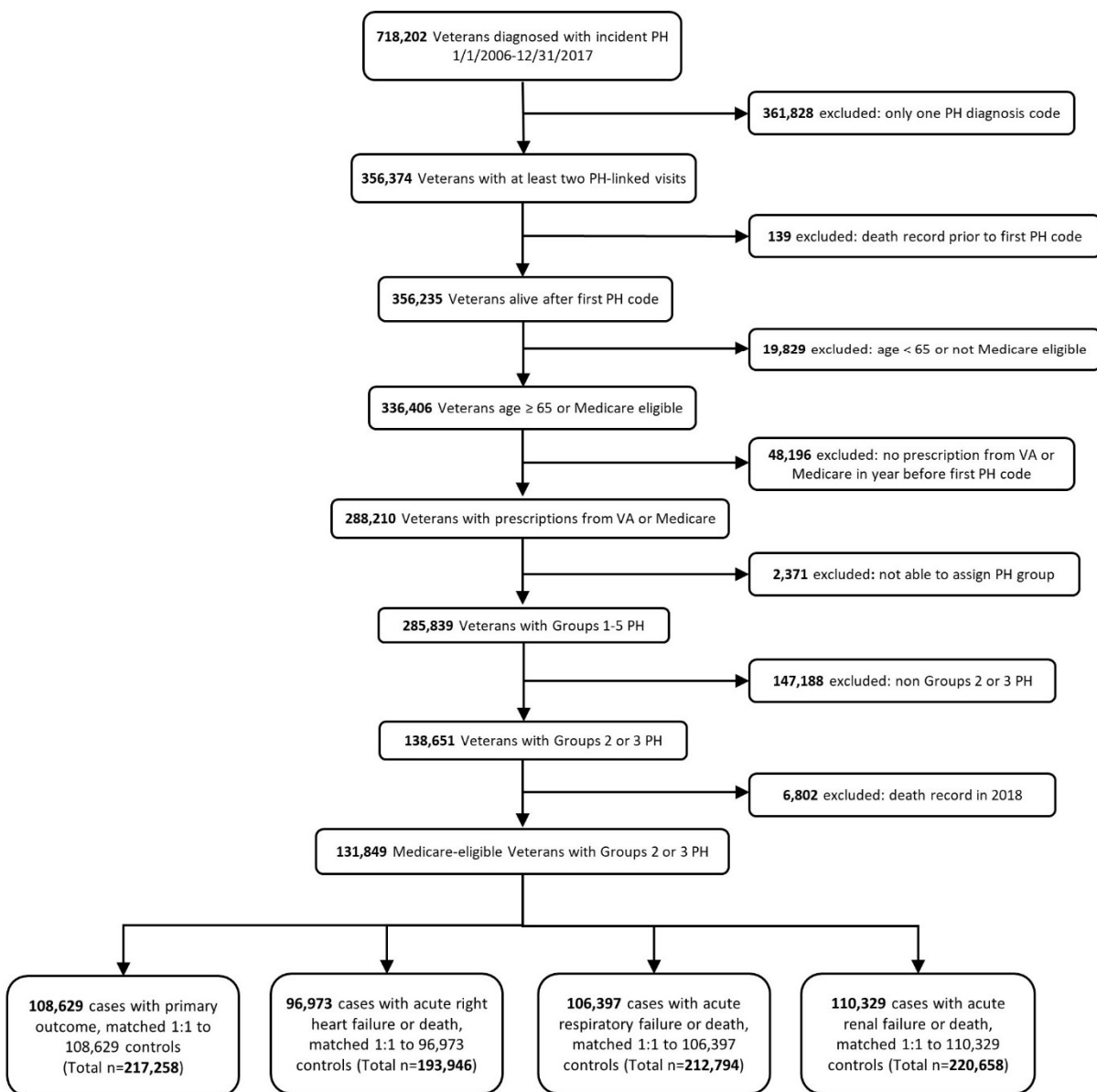**Supplementary Material**

e-Figure 1: Sample derivation for cohort study of Medicare-eligible Veterans with Groups 2 and 3 PH

e-Figure 2: Sample derivation for case-control study of Medicare-eligible Veterans with Groups 2 and 3 PH

718,202 Veterans diagnosed with incident PH 1/1/2006-12/31/2017

361,828 excluded: only one PH diagnosis code

356,374 Veterans with at least two PH-linked visits

139 excluded: death record prior to first PH code

356,235 Veterans alive after first PH code

19,829 excluded: age < 65 or not Medicare eligible

336,406 Veterans age ≥ 65 or Medicare eligible

48,196 excluded: no prescription from VA or Medicare in year before first PH code

288,210 Veterans with prescriptions from VA or Medicare

2,371 excluded: not able to assign PH group

285,839 Veterans with Groups 1-5 PH

147,188 excluded: non Groups 2 or 3 PH

138,651 Veterans with Groups 2 or 3 PH

6,802 excluded: death record in 2018

131,849 Medicare-eligible Veterans with Groups 2 or 3 PH

108,629 cases with primary outcome, matched 1:1 to 108,629 controls (Total n=217,258)

96,973 cases with acute right heart failure or death, matched 1:1 to 96,973 controls (Total n=193,946)

106,397 cases with acute respiratory failure or death, matched 1:1 to 106,397 controls (Total n=212,794)

110,329 cases with acute renal failure or death, matched 1:1 to 110,329 controls (Total n=220,658)

e-Table 1. Pulmonary vasodilators included in exposure definition
Phosphodiesterase-5-inhibitors
Sildenafil
Revatio
Tadalafil
Adcirca
Vardenafil
Levitra
Endothelin receptor antagonists
Ambrisentan
Letairis
Bosentan
Tracleer
Macitentan
Opsumit
Prostacyclin analogs
Epoprostenol
Veletri
Epoprosenol sodium
Flolan
Iloprost
Ventavis
Treprostenil
Remodulin
Tyvaso
Orenitram
Selexipag
Uptravi
Soluble guanylate cyclase stimulators
Riociguat
Adempas

e-Table 2: Full list of variables included in multivariable models	
Variable	**Description**
Patient characteristics	
Age	Age at index date*
Sex	Male or female
Race / ethnicity	Categorized as White, Black, Hispanic, or other[†]
Marital status	In year of index date, categorized as married or other[‡]
VA benefits (priority status)	Categorized as highly disabled, low/moderately disabled, no service-connected disability with no copayments due to income (poverty), limited benefits with copayments
Body mass index	Most recent before index date, categorized as underweight, normal, overweight, Class I obesity, Class II or III obesity
Elixhauser comorbidity index	Sum of 31 comorbidity groups
Recent acute organ failure[§]	
Acute left heart failure	Single inpatient principal code or primary emergency room code in VA or Medicare in the 90 days before or on the index date
Acute right heart failure	"
Acute respiratory failure	"
Acute renal failure	"
Comorbidities	
Major adverse cardiac event[¶]	Single inpatient principal code or primary emergency room code in VA or Medicare any time before or on the index date
Stroke	"
Congestive heart failure	≥ 2 days with inpatient or outpatient codes in VA or Medicare in the 731 days before or on the index date
Arrhythmia	"
Coronary atherosclerosis	"
Transient ischemic attack	"
Chronic lung disease[#]	"
Interstitial lung disease	"
Obstructive sleep apnea	"
Pneumonia	"
Hypertension	"
Hyperlipidemia	"
Peripheral vascular disease	"
Venous thromboembolism	"
Diabetes	"
Chronic kidney disease	"
Hepatitis C	"
Cirrhosis	"
Malignancy	"

Anemia	"
Thyroid disease	"
Arthritis	"
Dementia	"
Neurodegenerative disease	"
Depression	"
Post-traumatic stress disorder	"
Schizophrenia	"
Other psychiatric condition	"
Alcohol / substance use disorder	"
Tobacco use disorder	"
Healthcare utilization	"
Right heart catheterization[§]	Performance of a right heart catheterization in the year before or on index date
Outpatient visits	Number of outpatient visit days in VA or Medicare in the year before or on index date
Outpatient PH visits[§]	Number of outpatient visit days linked to a PH diagnosis code in VA or Medicare in the year before or on index date
Outpatient visits in VA only	Number of Veterans with outpatient visits in VA only in year before or on index date
Outpatient visits in both VA and Medicare	Number of Veterans with outpatient visits in both VA and Medicare in year before or on index date
No outpatient visits	Number of Veterans with no outpatient visits in either VA or Medicare in year before or on index date
Hospitalizations	Number of inpatient discharges in VA or Medicare in year before or on index date
Urgent care or emergency room visits	Number of urgent or emergency room visit days in VA or Medicare in year before or on index date
Long-term VA care days	Number of long-term care days in VA in year before or on index date
*Facility characteristics***	
Region	Categorized as Northeast, South, Midwest, and West
Rurality	Defined by the VA urban/rural designation
Complexity rating[††]	Comprised of patient volume and risk, level of teaching and research, number of specialists, and level of intensive care units within the facility; divided into 1a, 1b, 1c, 2, and 3

Definitions of abbreviations: PH=pulmonary hypertension; VA=Veterans Health Administration

[*] Defined as first prescription for pulmonary vasodilator in the cohort study and first PH diagnosis code in the case-control study

[†] Includes American Indian, Asian, Pacific Islander, unknown

[‡] Includes separated, divorced, widowed, single, never married, unknown

[§] Included in cohort study model only

[¶] Including myocardial infarction, coronary revascularization, cardiac arrest

[#] Includes chronic obstructive lung disease, asthma, bronchiectasis, pneumoconiosis

[**] Patients were assigned to VA facilities based on the location of the most recent PH-associated visit on or before the index date

[††] 1a-1c: high complexity of patient volume and risk, high volume of teaching and research; 2: moderate complexity of patient volume and risk; some teaching and research; 3: low complexity of patient volume and risk, little or no teaching or research