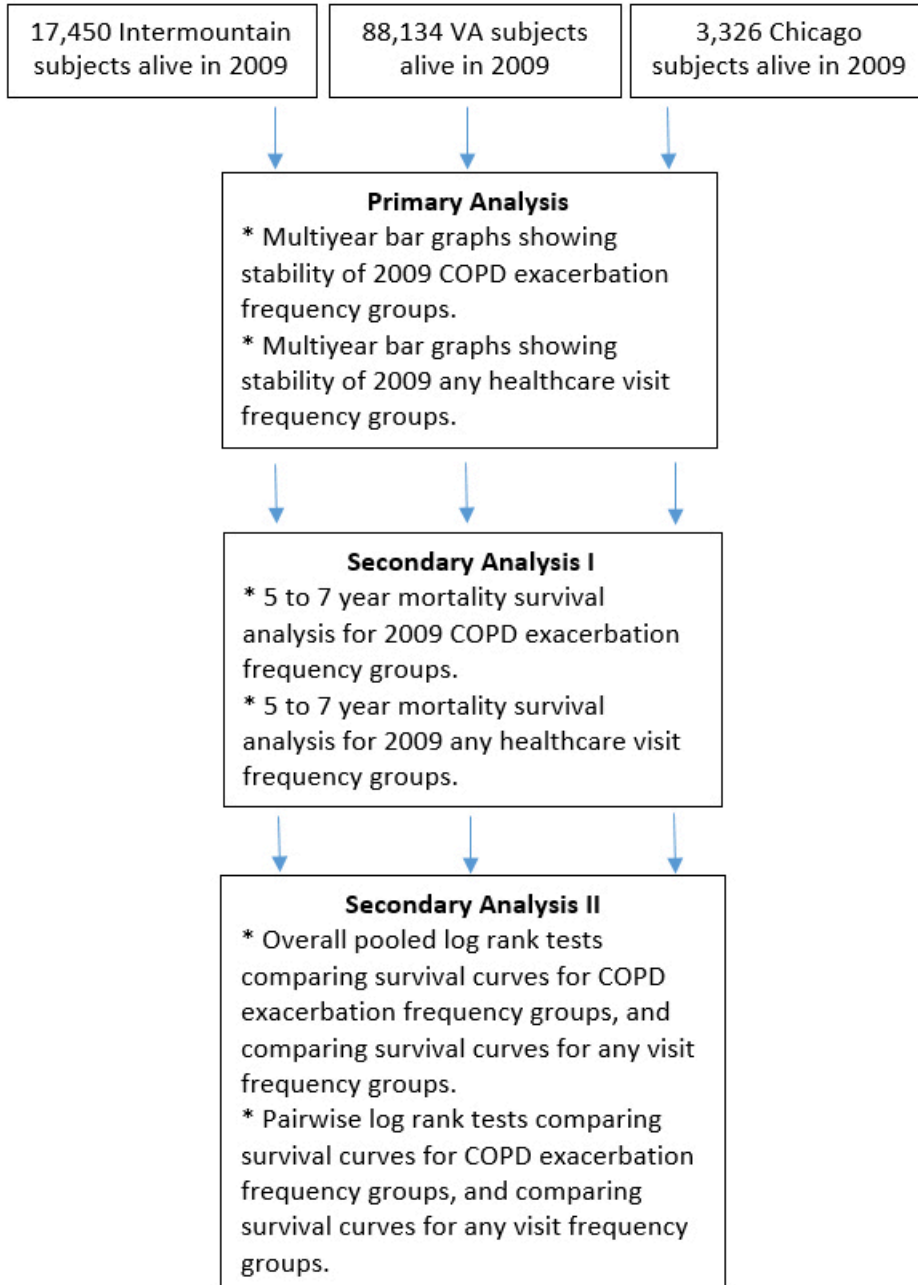


## Online Supplement Flow Diagram of Statistical Analysis Plan



### Online Supplement Table 1. Billing Codes for COPD Used to Define the Data Sets in the Different Cohorts

COPD related billing codes used for Intermountain Data set:

ICD9 code (491.2, 492) in any sequence or a DRG (190-192) at any inpatient, ED, or ambulatory face-to-face encounter in 2013 or prior were identified.

COPD related billing codes used for Veterans Affairs Validation Data set:

Diagnosis of COPD:

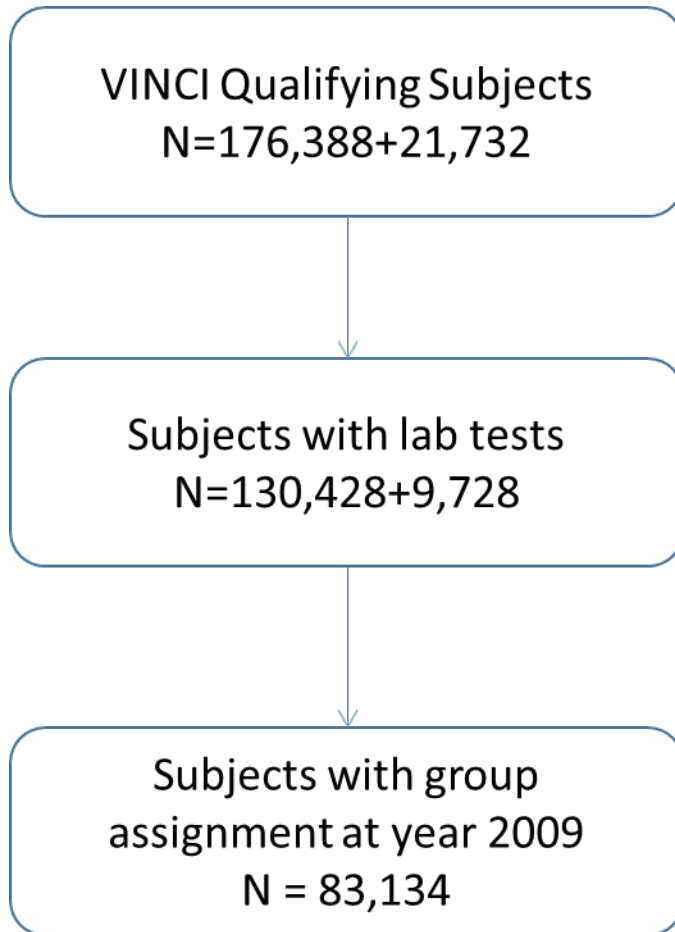
- a. COPD: ICD10: J44.1
- b. COPD: ICD9: 496
- c. Chronic obstructive Lung Disease: ICD9: 496
- d. Emphysema: ICD9: 492.\*
- e. Chronic bronchitis: ICD9: 491.9
- f. Obstructive chronic bronchitis: ICD9: 491.21
- g. Pulmonary emphysema: ICD9: 492.8
- h. Pulmonary emphysema: ICD10: J43.0
- i. Chronic airway obstruction: ICD9: 496
- j. Chronic bullous emphysema: ICD10: J43.9
- k. Chronic bullous emphysema: ICD9: 429.0

COPD related billing codes used for University of Chicago Medicine Data set:

ICD9 code 491.2 or 492.x.

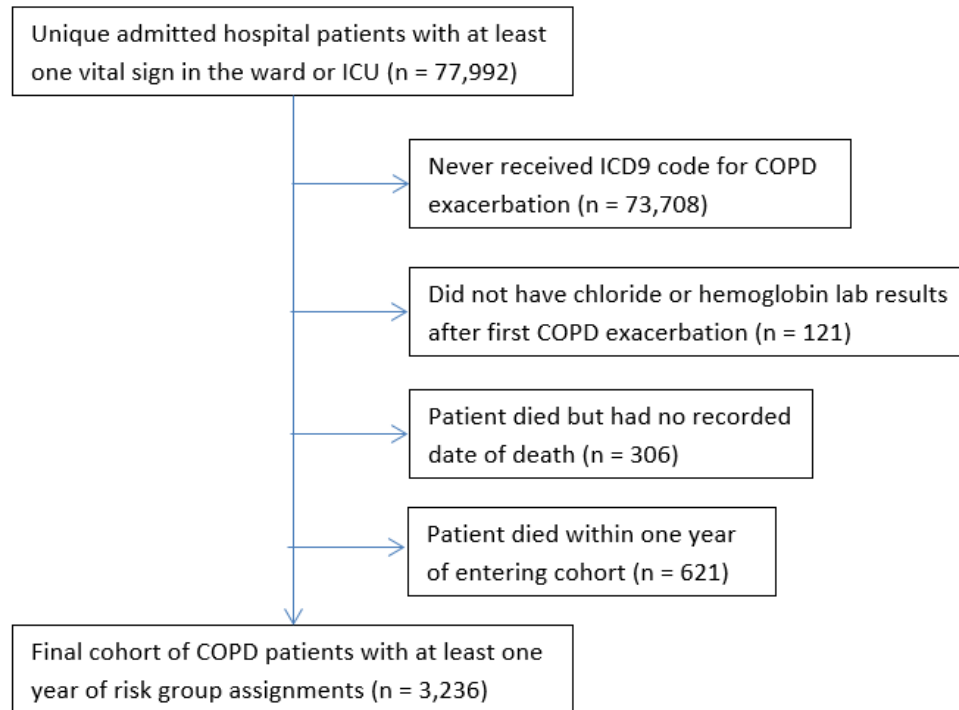
### Online Supplement Figure 1. VA CONSORT Diagram

Subjects alive and having a COPD diagnosis on or before 2009 who had complete metabolic panel and complete blood count in 2009.



### Online Supplement Figure 2. University of Chicago Medicine Consort Diagram

Patients in the University of Chicago Medicine system who had a COPD exacerbation billing code and a set of laboratory values (hemoglobin and Chloride) at least once after that exacerbation who were alive at least a year within the cohort and had a known date of death.



**Online Supplement Table 2. Basic Demographics for the Intermountain Health**

**Care COPD Cohort**

Category		Overall N=17 450		Infrequent Exacerbators N=14707 N (%)		Intermediate N=2212 N (%)		Frequent Exacerbators N=531 N (%)	
sex	female	8334	47.8%	7016	47.7%	1060	47.9%	258	48.6%
race	Asian	108	0.6%	100	0.7%	7	0.3%	1	0.2%
	African American	152	0.9%	135	0.9%	14	0.6%	3	0.6%
	Hispanic	61	0.3%	31	0.2%	28	1.3%	2	0.4%
	Native American	82	0.5%	75	0.5%	5	0.2%	2	0.4%

	Other	104	0.6%	83	0.6%	14	0.6%	7	1.3%
	Pacific Islander	81	0.5%	69	0.5%	11	0.5%	1	0.2%
	Unknown	1029	5.9%	753	5.1%	222	10.0%	54	10.2%
	Caucasian	15833	90.7%	13461	91.5%	1911	86.4%	461	86.8%
Age	under 40	959	5.5%	853	5.8%	96	4.3%	10	1.9%
	40 to 65	8469	48.5%	7276	49.5%	960	43.4%	233	43.9%
	66 to 79	5948	34.1%	4935	33.6%	822	37.2%	191	36.0%
	80 and older	2074	11.9%	1643	11.2%	334	15.1%	97	18.3%

**Online Supplement Table 3. Basic Demographics for the VA COPD Cohort**

	Category	N (%) N=83134
Age	Under 40	1086 (1%)
	40 to 65	40311(48%)
	66 to 79	28016 (34%)
	80 +	13718 (17%)
Sex	Female	3913( 5%)
Race	AMERICAN INDIAN OR ALASKA NATIVE	496 (1%)

	ASIAN	278(0.3%)
	BLACK OR AFRICAN AMERICAN	9080 (11%)
	DECLINED TO ANSWER	2399 (3%)
	NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER	651 (1%)
	NULL	7001 (8%)
	UNKNOWN BY PATIENT	1465 (2%)
	WHITE	61671 (74%)
	WHITE NOT OF HISP ORIG	93 (0.1%)

**Online Supplement Table 4. University of Chicago Cohort Demographics**

		Total (n=3,236)
Age (years) (median,IQR)		65 (58, 73)
Female (n,%)		1,680 (52%)
Race (n,%)	Black	2,041 (63%)
	White	1,069 (33%)
	Other	126 (4%)