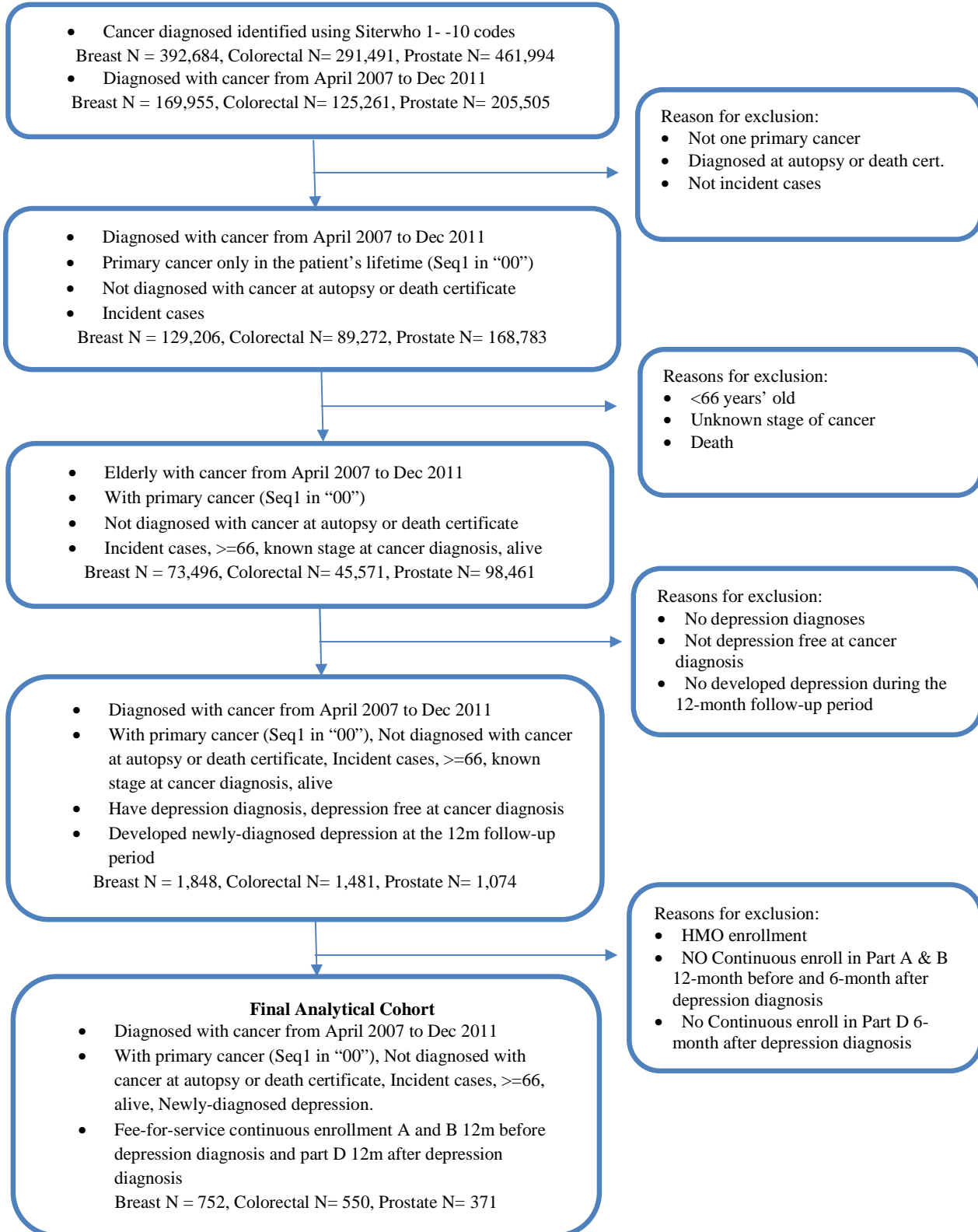**Appendix 1.1** Study Cohort Development Flow Diagram for Study Population of Elderly Medicare Beneficiaries Diagnosed with Incident Breast, Colorectal or Prostate cancer and Newly-diagnosed Depression

- Cancer diagnosed identified using Siterwho 1- -10 codes
  Breast N = 392,684, Colorectal N= 291,491, Prostate N= 461,994
- Diagnosed with cancer from April 2007 to Dec 2011
  Breast N = 169,955, Colorectal N= 125,261, Prostate N= 205,505

Reason for exclusion:
- Not one primary cancer
- Diagnosed at autopsy or death cert.
- Not incident cases

- Diagnosed with cancer from April 2007 to Dec 2011
- Primary cancer only in the patient's lifetime (Seq1 in "00")
- Not diagnosed with cancer at autopsy or death certificate
- Incident cases
  Breast N = 129,206, Colorectal N= 89,272, Prostate N= 168,783

Reasons for exclusion:
- <66 years' old
- Unknown stage of cancer
- Death

- Elderly with cancer from April 2007 to Dec 2011
- With primary cancer (Seq1 in "00")
- Not diagnosed with cancer at autopsy or death certificate
- Incident cases, >=66, known stage at cancer diagnosis, alive
  Breast N = 73,496, Colorectal N= 45,571, Prostate N= 98,461

Reasons for exclusion:
- No depression diagnoses
- Not depression free at cancer diagnosis
- No developed depression during the 12-month follow-up period

- Diagnosed with cancer from April 2007 to Dec 2011
- With primary cancer (Seq1 in "00"), Not diagnosed with cancer at autopsy or death certificate, Incident cases, >=66, known stage at cancer diagnosis, alive
- Have depression diagnosis, depression free at cancer diagnosis
- Developed newly-diagnosed depression at the 12m follow-up period
  Breast N = 1,848, Colorectal N= 1,481, Prostate N= 1,074

Reasons for exclusion:
- HMO enrollment
- NO Continuous enroll in Part A & B 12-month before and 6-month after depression diagnosis
- No Continuous enroll in Part D 6-month after depression diagnosis

Final Analytical Cohort
- Diagnosed with cancer from April 2007 to Dec 2011
- With primary cancer (Seq1 in "00"), Not diagnosed with cancer at autopsy or death certificate, Incident cases, >=66, alive, Newly-diagnosed depression.
- Fee-for-service continuous enrollment A and B 12m before depression diagnosis and part D 12m after depression diagnosis
  Breast N = 752, Colorectal N= 550, Prostate N= 371

Appendix 1.2
Adjusted Odds Ratios and 95% Confidence Intervals of Depression Treatment Categories by Cancer Type
from Multinomial Logistic Regression on Depression Treatment Categories
Elderly Fee-for-service Medicare beneficiaries with Breast, Colorectal or Prostate Cancer

	Antidepressants Only		Psychotherapy only		Combined AD/Psych	
SEER-Medicare data from 2007-2012						
	AOR	95%CI	AOR	95%CI	AOR	95%CI
Reference Group = Women Breast Cancer						
Cancer types						
Women Colorectal Cancer	.93	.67-1.29	.97	.59-1.60	.72	.47-1.09
Men Colorectal Cancer	.87	.55-1.35	1.54	.81-2.95	1.04	.60-1.81
Men Prostate Cancer	1.10	.76-1.57	1.01	.56-1.82	1.17	.74-1.85
Reference Group = Men Prostate Cancer						
Women Breast Cancer	.91	.64-1.31	.99	.55-1.79	.85	.54-1.35
Women Colorectal Cancer	.85	.57-1.28	.96	.51-1.81	.61	.37-1.03
Men Colorectal Cancer	.79	.48-1.30	1.53	.74-3.18	.89	.48-1.65

Note: Based on 1,673 elderly fee-for-service Medicare beneficiaries with incident breast, Colorectal or prostate cancer and Newly-diagnosed depression who were continuously enrolled in Medicare Part A and B during the observation period and Part D during the follow-up period. Asterisks represent significant differences in study population characteristics by depression treatment categories, derived from multinomial logistic regression.

AD: Antidepressants; AOR: Adjusted odds ratio; CI: Confidence interval; Psych: Psychotherapy.