Appendix A
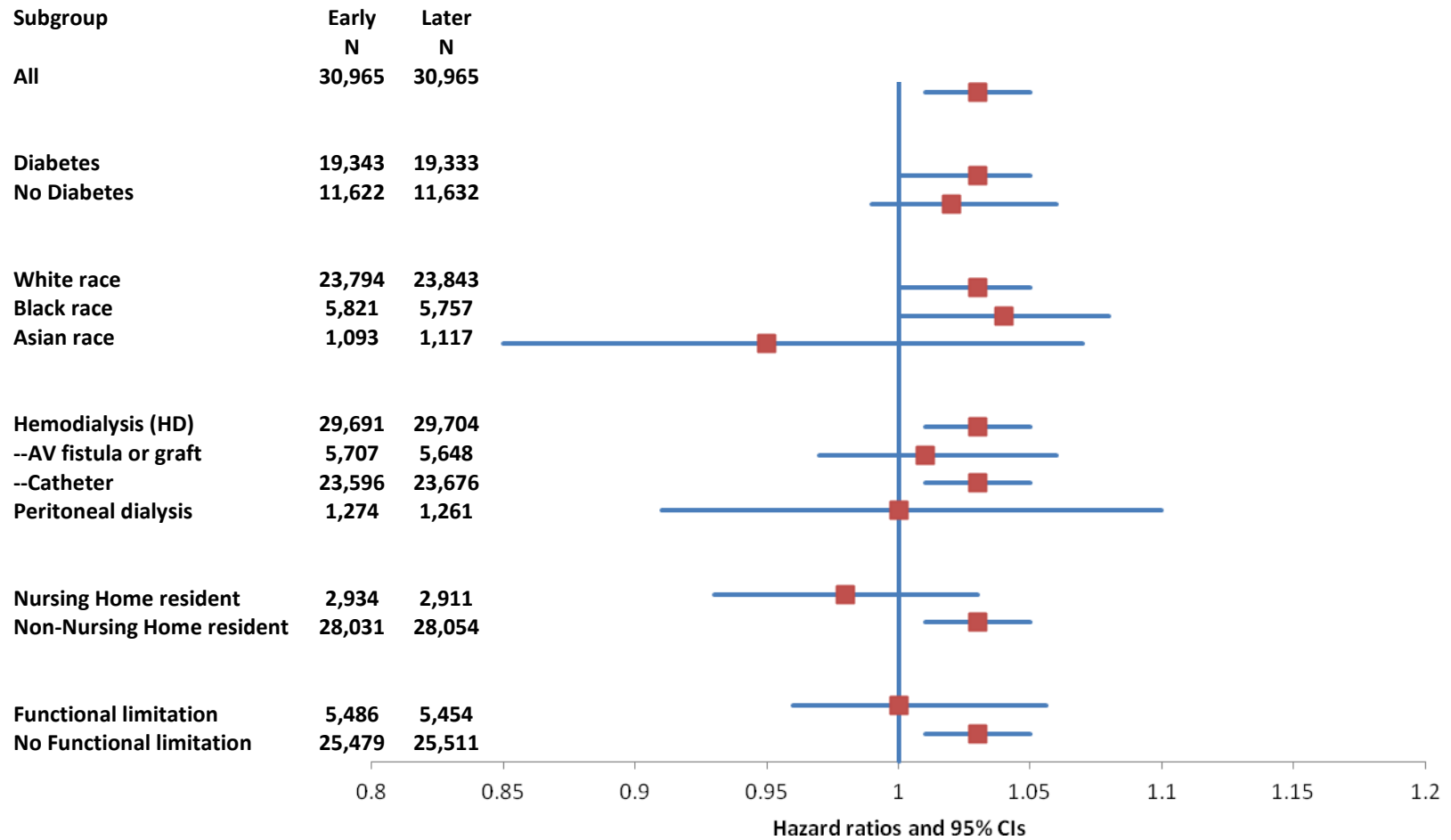
Hazard ratios for All-Cause Hospitalization comparing Early versus Later Dialysis Initiators, by Subgroups

Subgroup	Early N	Later N
All	30,965	30,965
Diabetes	19,343	19,333
No Diabetes	11,622	11,632
White race	23,794	23,843
Black race	5,821	5,757
Asian race	1,093	1,117
Hemodialysis (HD)	29,691	29,704
--AV fistula or graft	5,707	5,648
--Catheter	23,596	23,676
Peritoneal dialysis	1,274	1,261
Nursing Home resident	2,934	2,911
Non-Nursing Home resident	28,031	28,054
Functional limitation	5,486	5,454
No Functional limitation	25,479	25,511

Hazard ratios and 95% CIs

Appendix B

Claims Codes Used to Define Pre-dialysis Health Status

Pre-dialysis factor	Code Type	Codes
Acute kidney injury	ICD-9	584, 958.5
Uremia	ICD-9	586
Hyperkalemia	ICD-9	276.7

Use of Pre-dialysis Claims to Define Patient Comorbidities

A comorbid condition was considered present if a code for it appeared on one or more Medicare Part A institutional claim (inpatient, skilled nursing facility, or home health agency) or two or more Part A outpatient or Part B physician/supplier claims or one or more Part A outpatient and one or more Part B physician/supplier claims during the definition period.

Comorbidity	ICD-9-CM diagnosis codes	ICD-9-CM V codes
Atherosclerotic heart disease	410-414	V45.81, V45.82
Congestive heart failure	398.91;422; 425; 428; 402.X1; 404.x1; 404.x3	V42.1
Cerebrovascular accident/Transient ischemic attack	430-438	
Peripheral vascular disease	440-444; 447; 451-453; 557	
Other Cardiac Disease	420-421;423-424; 429; 785.0-785.3	V42.2,V43.3
Chronic obstructive pulmonary disease	491-494; 496; 510	
Gastrointestinal bleeding	456.0-456.2; 530.7; 531-534; 569.84; 569.85; 578	
Liver disease	570; 571; 572.1; 572.4; 573.1-573.3	V42.7
Dysrhythmia	426-427	V45.0, V53.3
Cancer	140-172; 174-208; 230-231; 233-234	
Diabetes	250; 357.2; 362.0x; 366.41	

Appendix C

Hospitalizations

Hospitalization events were identified through Medicare Institutional Claims data.

Assessment of Cardiovascular Disease Hospitalizations

Cardiovascular disease (CVD) hospitalizations were assigned as the underlying cause of hospitalization using ICD9-CM and CPT codes as defined in the table below. The event is considered to have occurred if any of the criteria are met (e.g. ICD-CM primary diagnosis code, ICD9-CM secondary diagnosis code, or CPT code).

Definition or Term	ICD9-CM Primary Diagnosis Codes	ICD9-CM Secondary Diagnosis Codes	CPT Codes
Congestive heart failure (CHF), Cardiomyopathy	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425, 428, 518.4, 276.6		
Ischemic heart disease (IHD)	410-414	410, 411.81	36.0, 36.9, 36.1, 36.2
Conduction disorders and dysrhythmias	426-427 798	427.4, 427.41-427.42, 427.5	37.6-37.8, 37.94-37.97, 00.50-00.54
Cerebrovascular disease	430-438	430, 431, 432, 433.01, 434.01, 436, 437.2, 435-435.9	38.10, 38.11, 38.12
Circulatory system	440-456, 458-459, 250.7		38.13,38.18, 38.38,39.22, 39.25,39.25, 39.26,39.28, 39.29, 84.0, 84.1, 84.91

Other cardiac	394-398, 415-420.8, 422-424, 429		

Assignment of Infectious Hospitalizations

Infectious hospitalizations were assigned using ICD-9 CM codes using both Medicare institutional and provider/supplier claims data as defined in the table below. Additionally:
- Primary diagnosis code of infection defined in the table below.
- If primary code was sepsis, we checked for any secondary code that was an access-related infection.

Category	ICD-9 CM Diagnosis Codes
Sepsis	038, 790.7
Access related infection	996.62, 567, 996.68, 999.31
Endocarditis	036.42, 421
Respiratory Tract Infection	011, 012, 033, 034, 460-466, 473, 480-488, 490, 513, 491.1, 494, 510-511, 513.0, 518.6, 519.01,
Skin/bone/joint infections	015, 035, 036.82, 730, 680-686.9, 711, 996.66, 996.67, 706.0
Gastrointestinal lumen infections	001, 002, 003,004, 005, 006, 007, 008, 009, 567, 014, 569.5
Central nervous system infections	036.0, 036.1, 036.2, 047, 049, 320, 324, 013, 036.81, 045-049, 062, 063, 064, 320-326
Fungal infections	112, 117
Genitourinary infections	016, 590-590.9, 595-595.4, 597-597.89, 598.0, 599.0, 601-601.9, 604-604.9, 607.1, 607.2, 608.0, 608.4, 614-616.1, 616.3-616.4, 616.8, 670, 996.64, 996.65,
Other	010, 017, 018, 020-027, 030, 031, 032, 036.3, 036.4,036.40, 036.41, 036.43, 036.89, 036.9, 037, 039, 040, 041, 042, 050-059, 060, 061, 065, 066, 070-079, 080-088, 090-099,100-139, 254.1, 331.81, 372-372.39, 373.0-373.2, 388.60, 382-382.4, 383.0, 386.33, 386.35, 390-393, 422.0, 422.91-422.93, 472-474.0, 475-476.1, 478.21-478.24, 478.29, 522.5, 522.7, 527.3, 528.3, 540-542, 566, 572-572.1, 573.1-573.3, 575-575.12, 611.0, 790.8, 996.60, 996.61, 996.63, 996.69, 997.62, 998.5, 999.3

Mortality

Mortality was assigned as the cause of death through use of data from the National Death Index (NDI) records. Patient deaths were ascertained through data from the ESRD Death Notification (Form CM-2746). NDI records were obtained for each patient death through linkage with data from the USRDS. These records provide cause of death information (ICD-10 codes) from the U.S. Standard Certificate of Death. All codes in Section 27, Part I (including immediate and

underlying causes of death) were included. Cause of death was assigned using only the primary cause of death. If the primary cause was a renal related code (e.g. diabetes with kidney complications [E08.2-E02.29, E09.2-E0.29, E10.2-E10.29, E11.2-E11.29, E13.2-13.29], hypertensive kidney disease [I12-I12.9, I13-I13.2], intrinsic renal disease [N00-N08, N10-N19, N29, N28], small kidney of unknown cause [N27], unspecified contracted kidney [N26], congenital malformations of the urinary system [Q60-Q64]), cause of death was assessed using the secondary cause of death code.

Cause Specific Mortality

Cardiovascular Disease Related Mortality

Primary cause of death due to cardiovascular disease was assessed using the codes as outlined in the table below:

Category	ICD-10 Diagnosis Codes
Chronic Rheumatic Heart Disease	I05-I09
Hypertensive Heart Disease	I10, I11, I15
Ischemic Heart Disease	I20-I25
Other Heart Disease	I33-I37, I42-I51
Cerebrovascular Disease	I60-I69
Disease of Arteries, Arterioles, and Capillaries	I70-I74, I77-I79
Other and unspecified Circulatory Systems	I98-I99
Vascular Disorders of Intestine	K55
Atherosclerotic Vascular Disease	
Coronary Artery Disease	I21, I22, I24, I25.0, I25.1, I25.5, I25.6, I25.8, I25.9, I51.6
Cerebrovascular Disease	I61, I62.9, I63, I64, I67.2, I67.9
Abdominal Aortic Aneurysm	I71
Peripheral Vascular Disease	I73.9, R02
Ischemic Bowel Disease	K55

Infectious Mortality

Primary cause of death due to infectious cause was assessed using the codes as outlined in the table below:

Category	ICD-10 Diagnosis Codes
Overall—Infectious Deaths codes	A00-B99, E06.0, G00-G08, I00-I01, I33, I38, J00-J06, J10-J18, J20-22, J36, J39.0, J39.1, J44.0, J85-J86, K35, K63.0, K65.0, K65.9, K80.0, K80.3, K80.4, K81, K83.0, L00-L08, M00-M02, M86, N30.0, N30.8, N41.0, N41.2, N41.3, O03.0, O03.5, O04.5, O07.0, O08.0, O75.3, O85-O86, R57.2, T80.2, T81.4, T82.6-T82.7, T83.5-T83.6, T84.5-T84.7, T85.7, T87.4, T88.0
Sepsis/Bacteremia	A40-A41, O85
Endocarditis	I33, I38, T82.6
Respiratory Tract Infection	J00-J06, J09-J18, J20-22, J36, J39.0, J39.1, J44.0, J85-J86