

Figure 1: Study population selection.

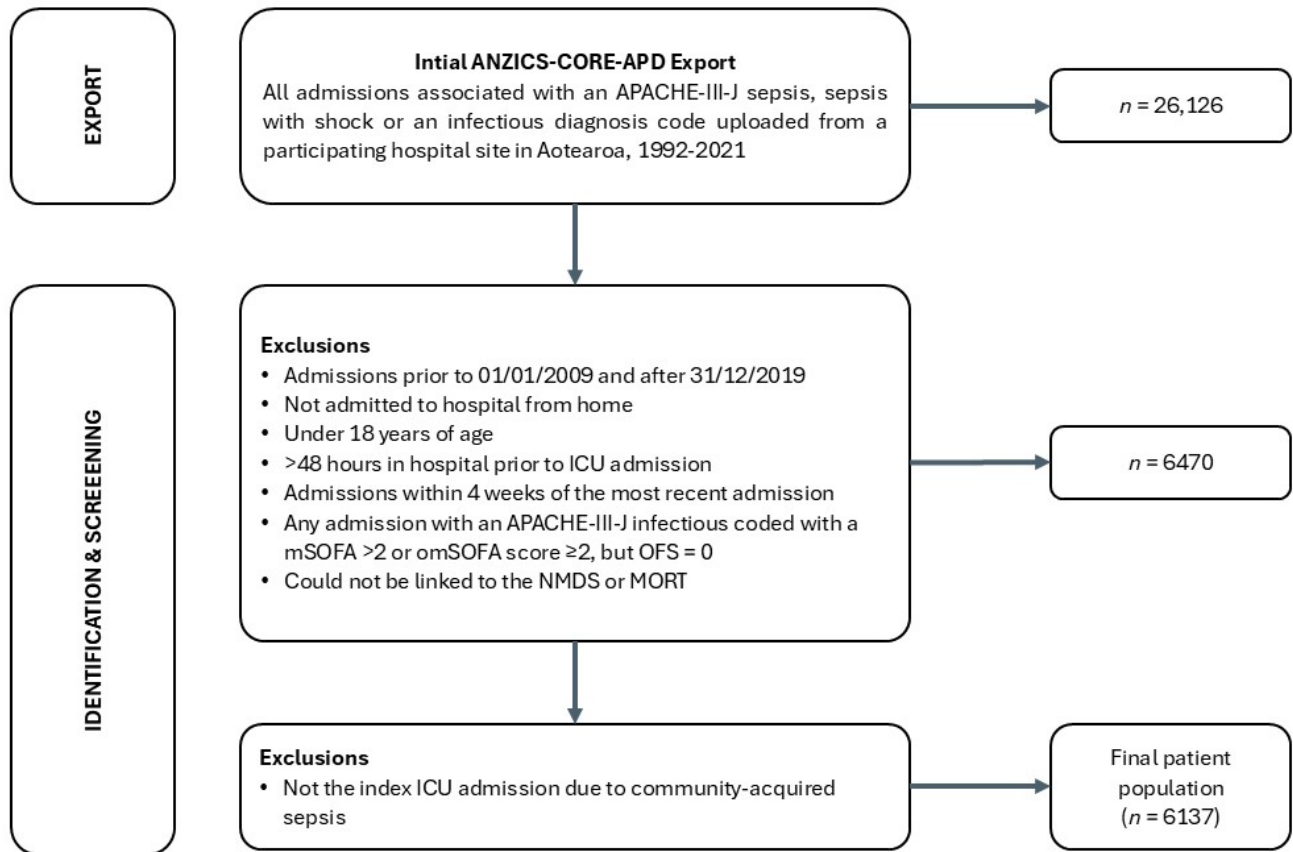


Table 1: Demographic characteristics, pre-existing conditions, sepsis risk factors and clinical severity by ethnicity.

Variables	Total cohort ^a (n=6,137)	Ethnicity ^a				p-value ^b
		Māori	Pacific	Asian	Non-MPA	
		(n=1,467)	(n=656)	(n=291)	(n=3,723)	
Sex						
Male	3,458 (56.3)	782 (53.3)	344 (52.4)	146 (50.2)	2,186 (58.7)	<0.001
Female	2,679 (43.7)	685 (46.7)	312 (47.6)	145 (49.8)	1,537 (41.3)	
Age						
Age, years	60.5 (±17.0)	54.8 (±16.0)	53.3 (±16.5)	54.1 (±17.6)	64.5 (±16.3)	<0.001
Age group						
<40 years	868 (14.1)	284 (19.4)	160 (24.4)	74 (25.4)	350 (9.4)	<0.001
40–59 years	1,803 (29.4)	567 (38.7)	240 (36.6)	90 (30.9)	906 (24.3)	
60–79 years	2,773 (45.2)	565 (38.5)	234 (35.7)	112 (38.5)	1,862 (50.0)	
≥80 years	693 (11.3)	51 (3.5)	22 (3.4)	15 (5.2)	605 (16.3)	
Socio-economic deprivation						
NZDep Q1 (lowest)	792 (12.9)	78 (5.3)	26 (4.0)	49 (16.8)	639 (17.2)	<0.001
NZDep Q2	1,012 (16.5)	136 (9.3)	48 (7.3)	59 (20.3)	769 (20.7)	
NZDep Q3	1,146 (18.7)	200 (13.6)	69 (10.5)	61 (21.0)	816 (21.9)	
NZDep Q4	1,576 (25.7)	383 (26.1)	153 (23.3)	74 (25.4)	966 (25.9)	
NZDep Q5 (highest)	1,565 (25.5)	670 (45.7)	358 (54.6)	43 (14.8)	494 (13.3)	

Table 1 (continued): Demographic characteristics, pre-existing conditions, sepsis risk factors and clinical severity by ethnicity.

Variables	Total cohort ^a (n=6,137)	Ethnicity ^a				p-value ^b
		Māori	Pacific	Asian	Non-MPA	
		(n=1,467)	(n=656)	(n=291)	(n=3,723)	
Severe comorbidities						
Cardiovascular	349 (5.7)	136 (9.3)	38 (5.8)	7 (2.4)	168 (4.5)	<0.001
Hepatic	96 (1.6)	25 (1.7)	12 (1.8)	4 (1.4)	55 (1.5)	0.865
Immune ^c	474 (7.7)	96 (6.5)	36 (5.5)	17 (5.8)	325 (8.7)	0.010
Renal	329 (5.4)	138 (9.4)	63 (9.6)	14 (4.8)	138 (3.7)	<0.001
Respiratory	360 (5.9)	143 (9.7)	44 (6.7)	4 (1.4)	169 (4.5)	<0.001
Severe multimorbidity						
None	4,783 (77.9)	1,038 (70.8)	500 (76.2)	248 (85.2)	2,997 (80.5)	<0.001
1 severe comorbidity	1,140 (18.6)	343 (23.4)	121 (18.4)	40 (13.7)	636 (17.1)	
≥2 severe comorbidities	214 (3.5)	86 (5.9)	35 (5.3)	3 (1.0)	90 (2.4)	
Sepsis prognostic factors^d						
Diabetes, type 2 ^e	1,541 (25.1)	496 (33.8)	282 (43.0)	81 (27.8)	682 (18.3)	<0.001
Hypertension	1,215 (19.8)	303 (20.7)	142 (21.6)	40 (13.7)	730 (19.6)	0.009
Obesity ^e	398 (6.5)	172 (11.7)	84 (12.8)	4 (1.4)	138 (3.7)	<0.001
Hazardous alcohol use	295 (4.8)	118 (8.0)	26 (4.0)	5 (1.7)	146 (3.9)	<0.001
Tobacco use	3,199 (52.1)	987 (67.3)	290 (44.2)	71 (24.4)	1,851 (49.7)	<0.001

Table 1 (continued): Demographic characteristics, pre-existing conditions, sepsis risk factors and clinical severity by ethnicity.

Variables	Total cohort ^a (n=6,137)	Ethnicity ^a				p-value ^b
		Māori	Pacific	Asian	Non-MPA	
		(n=1,467)	(n=656)	(n=291)	(n=3,723)	
Blood/immune deficiencies	1,067 (17.4)	289 (19.7)	111 (16.9)	38 (13.1)	629 (16.9)	0.019
Clinical severity						
Septic shock	2,164 (35.3)	536 (36.5)	249 (38.0)	109 (37.5)	1,270 (34.1)	0.116
Invasive ventilation	1,597 (26.0)	340 (23.2)	172 (26.2)	85 (29.2)	1,000 (26.9)	0.024
Acute renal failure	955 (15.6)	233 (15.9)	119 (18.1)	36 (12.4)	567 (15.2)	0.107
ANZROD score	0.06 [0.02,0.19]	0.05 [0.02,0.16]	0.05 [0.02,0.16]	0.04 [0.02,0.16]	0.07 [0.03,0.21]	0.489
ICU LOS, days	2.0 [1.0,3.9]	2.0 [1.0,3.8]	1.8 [0.9,3.3]	1.8 [1.0,3.5]	2.1 [1.1,4.1]	0.512
Hospital LOS, days	7.2 [4.1,13.5]	7.0 [4.1,13.0]	7.4 [4.0,13.7]	7.3 [4.5,13.1]	7.2 [4.1,13.8]	0.319

^an (%), mean (±SD) or median [interquartile range].

^bPearson's Chi-squared test with Yates' continuity correction or Kruskal-Wallis >2 sample test.

^cIncludes cancer and human immunodeficiency virus (HIV).

^dUnless otherwise identified, sepsis development risk factors were identified through previous hospital admission ICD-10-AM codes.

^eCurrent hospital admission.

Non-MPA = non-Māori, non-Pacific, non-Asian; ANZROD = Australian and New Zealand Risk of Death; ICU = intensive care unit; LOS = length of stay.

Table 2: In-hospital and post-discharge mortality by admission status.

Variable	Mortality outcomes by admission status							
	In-hospital				Post-discharge			
	Deaths ^a (n=1,002)	CFR ^b	Unadjusted RR ^c (95% CI)	Adjusted RR ^c (95% CI)	Deaths ^a (n=661)	CFR ^b	Unadjusted HR ^d (95% CI)	Adjusted HR ^d (95% CI)
Sex								
Female	447 (44.6)	16.7	ref	ref	247 (37.4)	11.1	ref	ref
Male	555 (55.4)	16.0	1.0 (0.9–1.1)	-	414 (62.6)	14.3	1.3 (1.12–1.53)	-
Ethnicity								
Non-MPA	672 (67.1)	18.0	ref	ref	412 (62.3)	13.5	ref	ref
Māori	199 (19.9)	13.6	0.8 (0.6–0.9)	0.9 (0.8–1.1)	189 (28.6)	14.9	1.1 (0.93–1.31)	1.5 (1.25–1.79)
Pacific	89 (8.9)	13.6	0.8 (0.6–0.9)	1.0 (0.8–1.2)	47 (7.1)	8.3	0.6 (0.44–0.80)	0.8 (0.61–1.13)
Asian	42 (4.2)	14.4	0.8 (0.6–1.1)	1.0 (0.8–1.4)	13 (2.0)	5.2	0.4 (0.21–0.64)	0.5 (0.29–0.87)
Age								
≤39 years	41 (4.1)	4.7	ref	ref	28 (4.2)	3.4	ref	-
40–59 years	208 (20.8)	11.5	2.4 (1.8–3.4)	-	159 (24.1)	10.0	3.0 (2.04–4.56)	-
60–79 years	553 (55.2)	19.9	4.2 (3.1–5.7)	-	347 (52.5)	15.6	4.9 (3.36–7.25)	-
≥80 years	200 (20.0)	28.9	6.1 (4.4–8.4)	-	127 (19.2)	25.8	8.6 (5.73–12.99)	-
Socio-economic deprivation								
NZDep Q1 (least)	131 (13.1)	16.5	ref	ref	76 (11.5)	11.5	ref	ref
NZDep Q2	172 (17.2)	17.0	1.0 (0.8–1.3)	1.1 (0.9–1.3)	96 (14.5)	11.4	1.0 (0.7–1.3)	1.0 (0.8–1.4)

Table 2 (continued): In-hospital and post-discharge mortality by admission status.

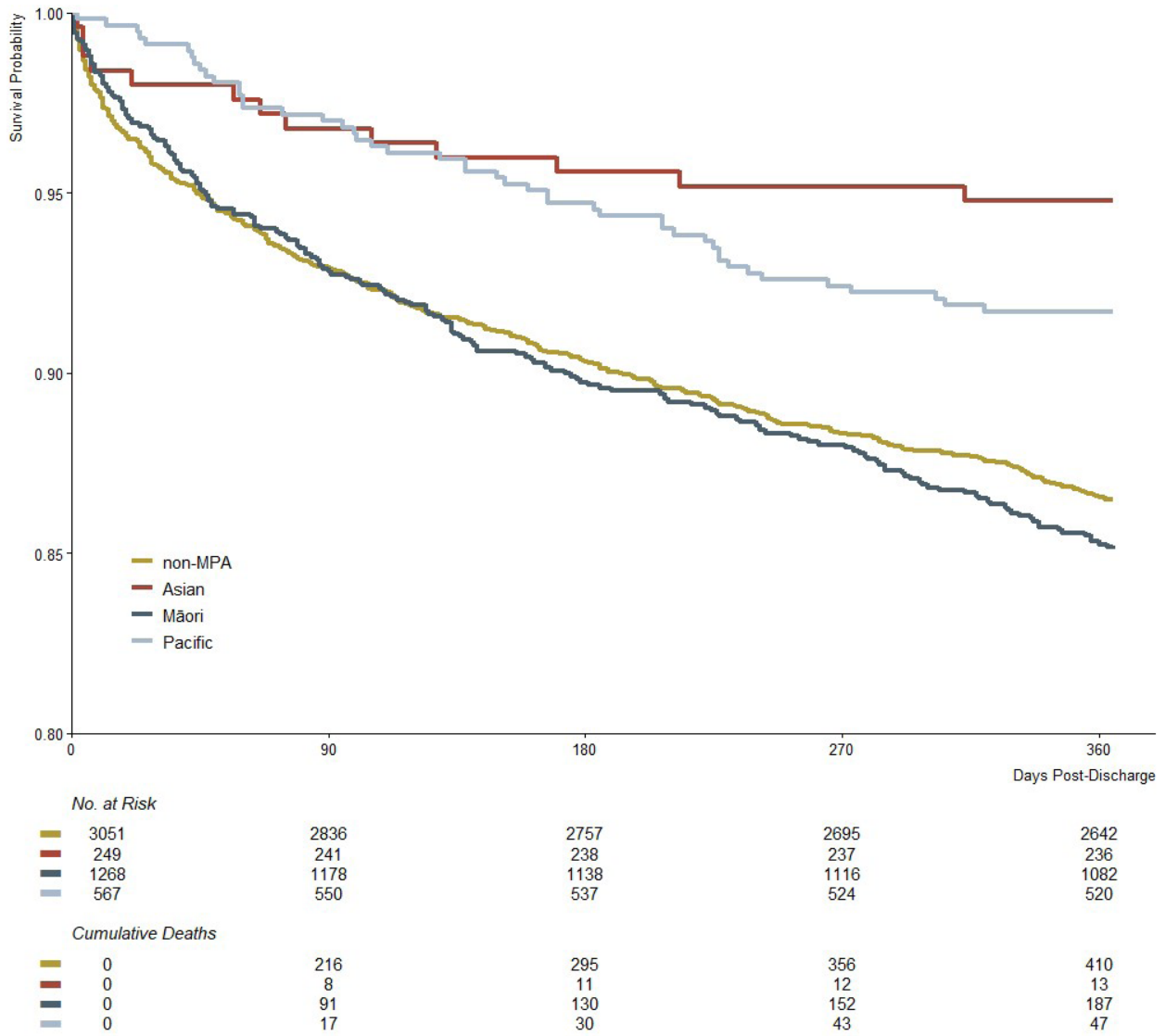
Variable	Mortality outcomes by admission status							
	In-hospital				Post-discharge			
	Deaths ^a (n=1,002)	CFR ^b	Unadjusted RR ^c (95% CI)	Adjusted RR ^c (95% CI)	Deaths ^a (n=661)	CFR ^b	Unadjusted HR ^d (95% CI)	Adjusted HR ^d (95% CI)
NZDep Q3	177 (17.7)	15.4	0.9 (0.8–1.1)	1.0 (0.8–1.2)	122 (18.5)	12.6	1.1 (0.8–1.5)	1.1 (0.9–1.5)
NZDep Q4	276 (27.5)	17.5	1.1 (0.9–1.3)	1.1 (0.9–1.4)	180 (27.2)	13.8	1.2 (0.9–1.6)	1.3 (1.0–1.7)
NZDep Q5 (most)	235 (23.5)	15.0	0.9 (0.7–1.1)	1.1 (0.9–1.3)	185 (28.0)	13.9	1.2 (0.9–1.6)	1.5 (1.2–2.0)
Severe comorbidities								
Respiratory	111 (11.1)	30.8	2.0 (1.7–2.4)	1.9 (1.6–2.2)	54 (8.2)	21.7	1.8 (1.4–2.4)	1.7 (1.3–2.2)
Cardiovascular	108 (10.8)	30.9	2.0 (1.7–2.4)	1.7 (1.4–2.0)	63 (9.5)	26.1	2.3 (1.8–3.0)	1.9 (1.4–2.4)
Hepatic	33 (3.3)	34.4	2.1 (1.6–2.8)	2.2 (1.7–2.9)	18 (2.7)	28.6	2.5 (1.6–4.0)	2.6 (1.6–4.1)
Renal	59 (5.9)	17.9	1.1 (0.9–1.4)	1.2 (0.9–1.5)	78 (11.8)	28.9	2.6 (2.1–3.3)	2.7 (2.2–3.5)
Immune	107 (10.7)	22.6	1.4 (1.2–1.7)	1.4 (1.2–1.6)	128 (19.4)	34.9	3.5 (2.9–4.3)	3.3 (2.7–4.0)
Number of severe comorbidities								
None	665 (66.4)	13.9	ref	ref	380 (57.5)	9.2	ref	ref
1	268 (26.7)	23.5	1.7 (1.5–1.9)	1.6 (1.4–1.9)	230 (34.8)	26.4	3.1 (2.7–3.7)	2.9 (2.5–3.5)
≥2	69 (6.9)	32.2	2.3 (1.9–2.9)	2.1 (1.7–2.6)	51 (7.7)	35.2	4.4 (3.3–5.8)	3.9 (2.9–5.2)
Sepsis prognostic factors								
Diabetes, type 2	278 (27.7)	18.0	1.1 (1.0–1.3)	1.0 (0.9–1.2)	197 (29.8)	27.2	1.3 (1.1–1.6)	1.2 (1.1–1.5)
Hypertension	260 (25.9)	21.4	1.4 (1.3–1.6)	1.2 (1.1–1.4)	183 (27.7)	24.7	1.8 (1.5–2.1)	1.4 (1.2–1.7)

Table 2 (continued): In-hospital and post-discharge mortality by admission status.

Variable	Mortality outcomes by admission status							
	In-hospital				Post-discharge			
	Deaths ^a (n=1,002)	CFR ^b	Unadjusted RR ^c (95% CI)	Adjusted RR ^c (95% CI)	Deaths ^a (n=661)	CFR ^b	Unadjusted HR ^d (95% CI)	Adjusted HR ^d (95% CI)
Immune suppressed	83 (8.3)	20.6	1.3 (1.1–1.6)	1.2 (1.0–1.5)	68 (10.3)	21.3	1.8 (1.4–2.3)	1.7 (1.3–2.2)
Obesity	64 (6.4)	16.1	1.0 (0.8–1.2)	1.0 (0.9–1.5)	43 (6.5)	12.9	1.0 (0.7–1.4)	1.2 (0.9–1.7)
Tobacco use	490 (48.9)	15.3	0.9 (0.8–1.0)	0.9 (0.8–1.0)	371 (56.1)	13.7	1.2 (1.0–1.4)	1.1 (1.0–1.3)
Hazardous alcohol use	62 (6.2)	21.0	1.3 (1.0–1.6)	1.5 (1.2–1.9)	26 (3.9)	11.2	0.9 (0.6–1.3)	1.0 (0.7–1.5)
Blood/immune deficiencies	209 (20.9)	19.6	1.3 (1.1–1.4)	1.1 (1.0–1.3)	158 (23.9)	18.4	1.6 (1.4–1.9)	1.5 (1.2–1.8)
Clinical severity								
Septic shock	425 (42.4)	19.6	1.4 (1.2–1.5)	1.3 (1.2–1.5)	217 (32.8)	12.5	1.0 (0.8–1.1)	0.9 (0.8–1.1)
Mechanical ventilation	464 (46.3)	29.1	2.4 (2.2–2.7)	2.7 (2.4–3.0)	98 (14.8)	8.6	0.6 (0.5–0.8)	0.7 (0.6–0.9)
Acute renal failure	361 (36.0)	37.8	3.1 (2.8–3.4)	2.8 (2.5–3.1)	106 (16.0)	17.8	1.5 (1.2–1.9)	1.4 (1.2–1.7)

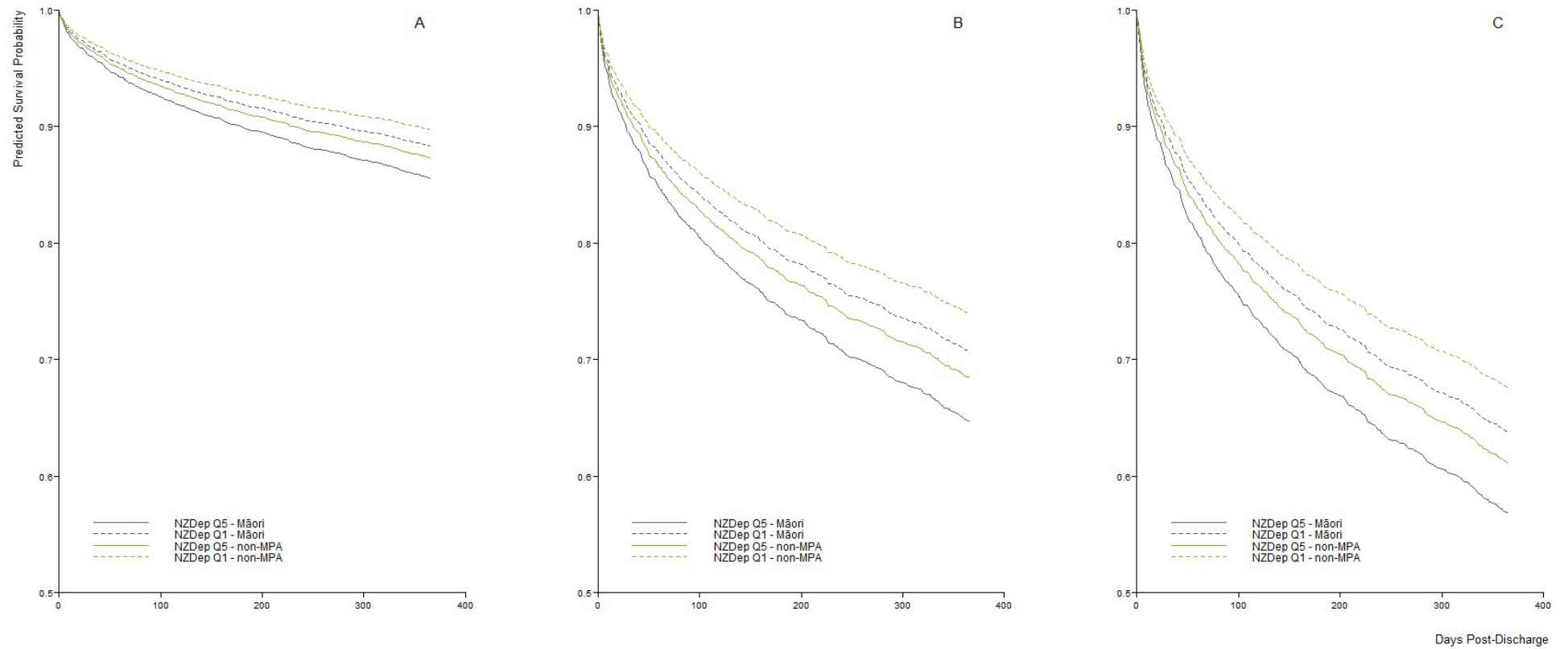
Patient outcomes are presented by admission status, in-hospital and post-discharge as ^anumber of deaths (%), ^bcase fatality risk per 100 community-acquired sepsis intensive care unit admissions, and mortality risk (^cRR = risk ratio; ^dHR = hazard ratio, unadjusted and adjusted for sex and age).
CFR = case fatality rate; CI = confidence interval.

Figure 2: Kaplan–Meier survival plot indicating the probability of patient survival by ethnicity from hospital discharge to 365 days post-discharge.



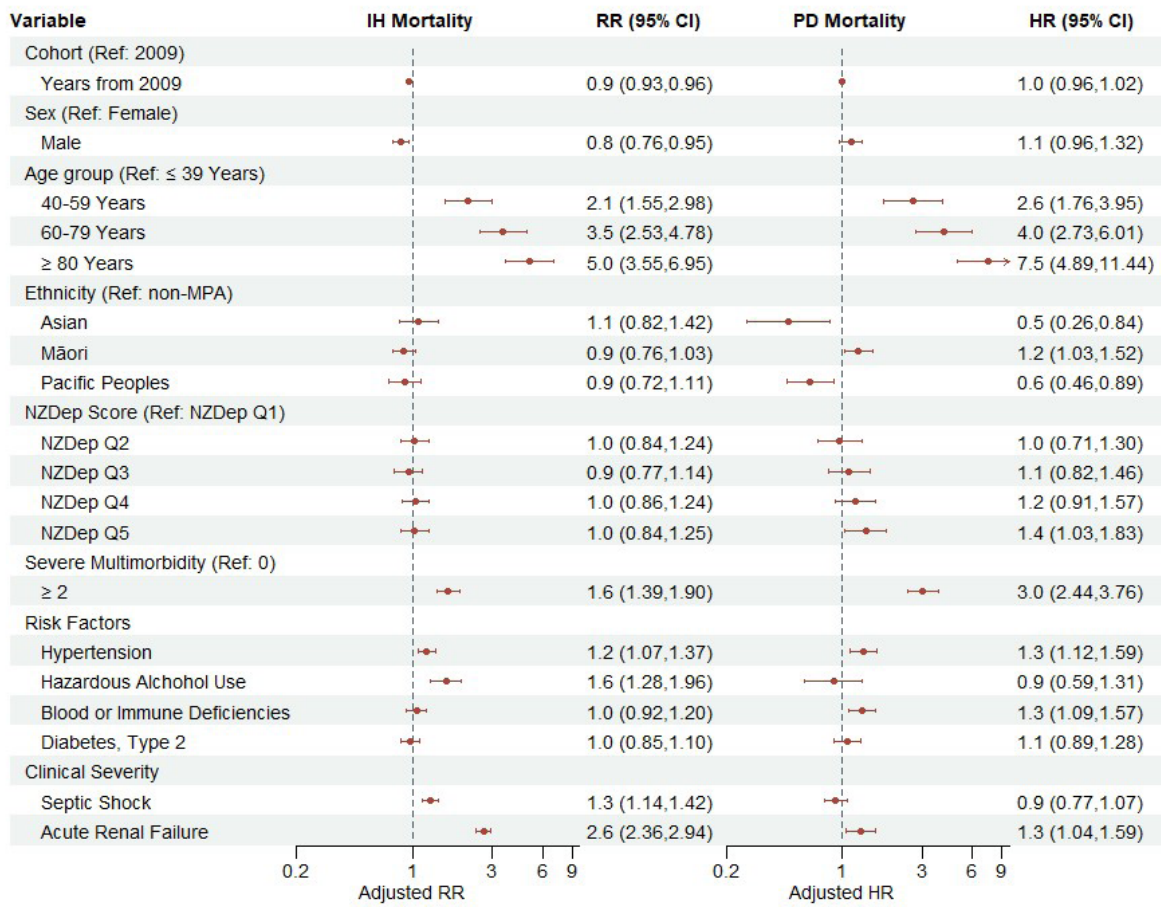
Kaplan–Meier curve for short-term survival following an index community-acquired sepsis intensive care unit admission by ethnicity. Survival analysis was censored at 365 days.

Figure 3: Cox proportional-hazards plots indicating predicted average patient survival after an index intensive care unit admission due to community-acquired sepsis by ethnicity, NZDep quintile and severe comorbidity from hospital discharge to 365 days post-discharge.



Cox proportional-hazard models were used to predict the post-discharge survival of the average patient (male, 60–79 years) and to compare survival hazards among ethnic and socio-economic populations based on the degree of severe multimorbidity. Other covariates were set at mode levels (the most frequently occurring observations). The severity of severe multimorbidity was categorised as A: no severe comorbidities, B: one severe comorbidity and C: more than two severe comorbidities.

Figure 4: Association between patient characteristics (demographics, pre-existing conditions and risk factors) identifiable at or within 48 hours of intensive care unit (ICU) admission and in-hospital (IH) and post-discharge (PD) mortality.



Multivariable analysis of variables identifiable at ICU admission associated with IH and PD mortality. IH mortality risk is presented as rate ratio with 95% confidence interval; post-discharge mortality risk is presented as hazard ratio with 95% confidence interval. Both models are adjusted for year, sex, age, ethnicity, socio-economic deprivation and severe multimorbidity.