Table 2. Development of Low Muscle Mass According to Serum 25(OH)D Levels Among Participants at Baseline (n = 192,908)

25(OH)D Levels (nmol/L)	Person-Years (PY)	Incident Cases	Incidence Density (/ 10^3 PY)	Age-Adjusted HR (95% CI)	Multivariable-Adjusted HR[a] (95% CI)		HR (95% CI)[b] in a Model with Time-Dependent Variables
					Model 1	Model 2	
Total (n=192,908)							
<25	120,174.0	3,539	29.4	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
25–<50	412,350.5	11,324	27.5	0.92 (0.89-0.96)	0.93 (0.90-0.97)	0.93 (0.90-0.97)	0.79 (0.76-0.83)
50–<75	154,073.9	3,914	25.4	0.83 (0.79-0.87)	0.83 (0.79-0.88)	0.85 (0.81-0.89)	0.65 (0.62-0.68)
≥75	34,114.8	749	22.0	0.68 (0.63-0.74)	0.67 (0.62-0.73)	0.77 (0.71-0.83)	0.52 (0.48-0.56)
p-trend				<0.001	<0.001	<0.001	<0.001
Women (n=85,898)							
<25	78,608.8	2,499	31.8	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
25–<50	175,005.9	5,428	31.0	0.97 (0.92-1.01)	0.94 (0.90-0.99)	0.96 (0.91-1.00)	0.81 (0.77-0.86)
50–<75	47,255.6	1,359	28.8	0.87 (0.81-0.92)	0.84 (0.78-0.90)	0.90 (0.84-0.97)	0.67 (0.63-0.72)
≥75	11,863.1	291	24.5	0.69 (0.61-0.78)	0.67 (0.59-0.76)	0.82 (0.72-0.92)	0.56 (0.50-0.62)
p-trend				<0.001	<0.001	<0.001	<0.001
Men (n=107,010)							
<25	41,565.2	1,040	25.0	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
25–<50	237,344.6	5,896	24.8	0.98 (0.92-1.05)	0.92 (0.86-0.98)	0.88 (0.82-0.94)	0.74 (0.69-0.80)
50–<75	106,818.3	2,555	23.9	0.92 (0.86-0.99)	0.82 (0.77-0.89)	0.78 (0.72-0.84)	0.61 (0.56-0.65)
≥75	22,251.7	458	20.6	0.76 (0.68-0.84)	0.67 (0.60-0.75)	0.71 (0.63-0.79)	0.48 (0.43-0.53)
p-trend				<0.001	<0.001	<0.001	<0.001

Note: *P*=0.025 for the overall interaction between sex and serum 25(OH)D levels for incident low muscle mass (multivariable-adjusted model 2)

[a] Estimated using Cox proportional hazard models. Multivariable model 1 was adjusted for age, sex (only for total), centre, year of screening examination, alcohol consumption, smoking, physical activity, total energy intake, education level, medication for hypertension, medication for diabetes, multivitamin supplement use, calcium supplement use, and season; model 2: model 1 plus adjustment for BMI

[b] Estimated using Cox proportional hazard models with quintiles of serum 25(OH)D levels, smoking, alcohol consumption, physical activity, total energy intake, medication for hypertension, medication for diabetes, multivitamin supplement use, calcium supplement use, season, and BMI as time-dependent variables and baseline age, sex (only for total), centre, year of screening examination, and education level as time-fixed variables.

Abbreviations: BMI, body mass index; CI, confidence interval; HR, hazards ratio; PY, person-year