Multimedia Appendix 1. Patient characteristics of each utilization phenotype in the training set (n=24,324).

Characteristics	Utilization phenotype								
	Inactive	A	B	C	D	E	F	G	Total sample
Size of group	3986	5343	6991	3000	2452	2082	430	40	24,324
Age, years, mean (SD)	41.9 (17.3)	47.7 (14.7)	53.7 (16.8)	56.6 (16.4)	59.9 (17.3)	65.1 (16.8)	67.4 (16.3)	60.5 (14.4)	52.7 (17.9)
Male, n (%)	1551 (38.9)	2057 (38.5)	2678 (38.3)	1083 (36.1)	922 (37.6)	716 (34.4)	158 (36.7)	8 (20)	9170 (37.7)
White, n (%)	1814 (45.5)	2875 (53.8)	3293 (47.1)	1635 (54.5)	1324 (54.0)	799 (38.4)	191 (44.4)	14 (35)	11,943 (49.1)
Asian, n (%)	694 (17.4)	1095 (20.5)	1734 (24.8)	675 (22.5)	596 (24.3)	525 (25.2)	76 (18)	4 (10)	5400 (22.2)
Black, n (%)	379 (9.5)	289 (5.4)	587 (8.4)	222 (7.4)	184 (7.5)	385 (18.5)	102 (23.7)	17 (43)	2165 (8.9)
Commercial, n (%)	2738 (68.7)	4266 (79.9)	4348 (62.2)	1731 (57.7)	1113 (45.4)	431 (20.7)	26 (6)	3 (8)	14,665 (60.3)
Medicare or Medicaid, n (%)	1068 (26.8)	992 (18.6)	2545 (36.4)	1245 (41.5)	1324 (54.0)	1628 (78.2)	402 (93.5)	37 (93)	9219 (38.0)
Other payer, n (%)	180 (4.5)	85 (2)	98 (1)	24 (1)	15 (1)	23 (1)	2 (1)	N/A[a]	440 (1.8)
Active medications at PCP visit, mean (SD)	0 (0)	2.3 (2.9)	5 (3.6)	5.5 (4.3)	8.1 (6)	11 (5)	15.7 (6.1)	16.2 (9.3)	4.7 (5.2)
Primary care visits, mean (SD)	0 (0)	0.7 (0.5)	2.6 (1.3)	2.1 (1.4)	2.9 (2.3)	7 (2.8)	11.5 (4.5)	33.2 (10)	2.3 (3)
Weighted primary care visits, mean (SD)	0 (0)	0.7 (0.6)	3.2 (1.8)	2.8 (1.9)	4.3 (3.7)	10.7 (4.4)	19.1 (7.8)	53.1 (15.6)	3.2 (4.7)
No-show visits, mean (SD)	0.1 (0.4)	0.2 (0.7)	0.5 (1)	0.6 (1.2)	1.4 (2.1)	1.8 (2.4)	4.3 (4.9)	6.2 (5.3)	0.7 (1.6)
Urgent care visits, mean (SD)	0 (0)	0.1 (0.5)	0.2 (0.5)	0.2 (0.6)	0.2 (0.6)	0.2 (0.7)	0.5 (1.2)	1.2 (2.4)	0.1 (0.5)

Characteristics	Utilization phenotype								
	Inactive	A	B	C	D	E	F	G	Total sample
Telephone encounters, mean (SD)	0 (0)	0.4 (0.7)	1.7 (1.8)	1.4 (1.6)	2.3 (2.5)	5.9 (3.8)	19.4 (10.3)	18.5 (22.5)	1.9 (3.8)
Emergency department visits, mean (SD)	0 (0)	0 (0)	0.2 (0.5)	0.2 (0.5)	0.3 (0.7)	0.5 (1)	1.6 (2.9)	1.8 (2.1)	0.2 (0.7)
Emergent hospitalizations, mean (SD)	0 (0)	0 (0)	0 (0.2)	0 (0.3)	0.1 (0.5)	0.2 (0.5)	0.9 (1.7)	0.9 (1.5)	0.1 (0.4)
Elective hospitalizations, mean (SD)	0 (0)	0 (0)	0 (0)	0 (0.2)	0.1 (0.3)	0 (0.2)	0.1 (0.4)	0 (0.2)	0 (0.1)
Specialist visits (capped), mean (SD)	0 (0)	1 (1.2)	1 (1)	5.5 (1.4)	14 (5.3)	4.4 (3.3)	11.5 (8.2)	7.6 (9.2)	3.2 (4.9)
Infusion visits, mean (SD)	0 (0)	0 (0.5)	0 (0.4)	0.1 (1)	0.7 (4.1)	0.1 (2.2)	0.1 (1.1)	0 (0.2)	0.1 (1.5)
Transfusion visits, mean (SD)	0 (0)	0 (0.8)	0 (0.2)	0.1 (0.8)	0.4 (2.6)	0 (0.6)	0.5 (3.3)	0.2 (1.3)	0.1 (1.1)
Radiology or procedure visits, mean (SD)	0 (0)	0.4 (0.8)	0.6 (1)	1.2 (1.4)	2.2 (2.6)	1.5 (1.7)	2.7 (3)	2.5 (2.9)	0.8 (1.5)
Secure electronic messages to patient, mean (SD)	0 (0)	0.7 (1.4)	2.3 (4.3)	4 (6.4)	6.8 (11.1)	3.4 (7.8)	5.6 (14.6)	5 (14.5)	2.4 (6.1)
Secure electronic messages from patient, mean (SD)	0 (0)	0.9 (1.8)	2.8 (5.3)	5 (8.2)	8.9 (15)	4.4 (10.4)	8.1 (22.3)	8.6 (25.5)	3.1 (8.1)

aN/A: not applicable.