



Table S1. Complete population characteristics.

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Parameter		Group			
		Overall (N=7604)	BRAF V600E (N=515)	KRAS G12C (N=237)	other KRAS (N=3591)
Sex	Female	3132 (41,19%)	295 (57,28%)	101 (42,62%)	1527 (42,52%)
	Male	4471 (58,81%)	220 (42,72%)	136 (57,38%)	2064 (57,48%)
Age [years]	< 30	21 (0,28%)	0 (0,00%)	0 (0,00%)	10 (0,28%)
	31-40	115 (1,51%)	6 (1,17%)	6 (2,53%)	49 (1,36%)
	41-50	432 (5,68%)	22 (4,27%)	13 (5,49%)	190 (5,29%)
	51-60	1298 (17,07%)	74 (14,37%)	36 (15,19%)	588 (16,37%)
	61-70	3192 (41,98%)	222 (43,11%)	111 (46,84%)	1486 (41,38%)
	71-80	2173 (28,58%)	156 (30,29%)	64 (27,00%)	1070 (29,80%)
	over 80	373 (4,91%)	35 (6,80%)	7 (2,95%)	198 (5,51%)
Tumour stage	T1	39 (0,98%)	0 (0,00%)	1 (0,83%)	25 (1,29%)
	T2	291 (7,29%)	10 (3,33%)	11 (9,09%)	144 (7,44%)
	T3	2611 (65,37%)	175 (58,33%)	81 (66,94%)	1243 (64,20%)
	T4	1039 (26,01%)	115 (38,33%)	28 (23,14%)	516 (26,65%)
	Tis	14 (0,35%)	0 (0,00%)	0 (0,00%)	8 (0,41%)
Nodal stage	N0	1006 (25,42%)	57 (19,32%)	37 (30,33%)	486 (25,34%)
	N1a	516 (13,04%)	40 (13,56%)	8 (6,56%)	272 (14,18%)
	N1b	735 (18,57%)	43 (14,58%)	27 (22,13%)	354 (18,46%)
	N1c	209 (5,28%)	11 (3,73%)	8 (6,56%)	114 (5,94%)
	N2a	649 (16,4%)	55 (18,64%)	26 (21,31%)	307 (16,01%)
	N2b	728 (18,39%)	82 (27,80%)	13 (10,66%)	336 (17,52%)
	Nx	115 (2,91%)	7 (2,37%)	3 (2,46%)	49 (2,55%)
Nodal stage (0 vs 1 vs 2)	N0	1006 (26,18%)	57 (19,79%)	37 (31,09%)	486 (26,00%)
	N1	1460 (37,99%)	94 (32,64%)	43 (36,13%)	740 (39,59%)
	N2	1377 (35,83%)	137 (47,57%)	39 (32,77%)	643 (34,40%)

Nodal stage (positive vs negative)	Negative	1006 (26,18%)	57 (19,79%)	37 (31,09%)	486 (26,00%)
	Positive	2837 (73,82%)	231 (80,21%)	82 (68,91%)	1383 (74,00%)
Histology	Adenocarcinoma NOS	6364 (89,93%)	362 (78,02%)	196 (88,69%)	3108 (88,52%)
	Partially mucinous	632 (8,93%)	89 (58,17%)	23 (56,10%)	382 (56,26%)
	Mucinous	35 (0,49%)	6 (3,92%)	0 (0,00%)	10 (1,47%)
	Cribriiform or comedo	32 (0,45%)	2 (1,31%)	2 (4,88%)	9 (1,33%)
	MANEC	14 (0,2%)	5 (3,27%)	0 (0,00%)	2 (0,29%)
Mucous component	No	6555 (86,2%)	385 (74,76%)	200 (84,39%)	2975 (82,85%)
	Yes	1049 (13,8%)	130 (25,24%)	37 (15,61%)	616 (17,15%)
Signet cells presence	No	7187 (94,52%)	474 (92,04%)	223 (94,09%)	3357 (93,48%)
	Yes	417 (5,48%)	41 (7,96%)	14 (5,91%)	234 (6,52%)
Lymphocytic infiltration	No	7518 (98,87%)	510 (99,03%)	237 (100,00%)	3549 (98,83%)
	Yes	86 (1,13%)	5 (0,97%)	0 (0,00%)	42 (1,17%)
Grade	G1	590 (12,14%)	26 (7,60%)	17 (10,90%)	299 (12,88%)
	G2	3509 (72,22%)	181 (52,92%)	122 (78,21%)	1708 (73,59%)
	G3	756 (15,56%)	134 (39,18%)	17 (10,90%)	313 (13,49%)
	G4	4 (0,08%)	1 (0,29%)	0 (0,00%)	1 (0,04%)
Grade (1-2 vs 3-4)	G1-2	4099 (84,36%)	207 (60,53%)	139 (89,10%)	2007 (86,47%)
	G3-4	760 (15,64%)	135 (39,47%)	17 (10,90%)	314 (13,53%)
Angioinvasion	No	816 (33,62%)	41 (21,69%)	26 (30,95%)	434 (36,94%)
	Yes	1611 (66,38%)	148 (78,31%)	58 (69,05%)	741 (63,06%)
Perineural invasion	No	740 (50,96%)	44 (38,94%)	25 (46,30%)	375 (53,19%)
	Yes	712 (49,04%)	69 (61,06%)	29 (53,70%)	330 (46,81%)
Primary tumour localization	Right colon	1570 (24,6%)	293 (69,43%)	35 (17,77%)	784 (25,87%)
	Left colon	1849 (28,97%)	58 (13,74%)	51 (25,89%)	825 (27,22%)
	Rectum	2964 (46,44%)	71 (16,82%)	111 (56,35%)	1422 (46,92%)
Primary sidedness	Left colon or rec- tum	4827 (75,46%)	129 (30,57%)	163 (82,32%)	2255 (74,20%)

	Right colon	1570 (24,54%)	293 (69,43%)	35 (17,68%)	784 (25,80%)
Primary localization (colon vs rectum)	Colon	4149 (58,33%)	398 (84,86%)	107 (49,08%)	1953 (57,87%)
	Rectum	2964 (41,67%)	71 (15,14%)	111 (50,92%)	1422 (42,13%)
Sample type	Endoscopy	1388 (22,91%)	73 (17,76%)	45 (22,84%)	654 (22,58%)
	Needle	218 (3,6%)	7 (1,70%)	12 (6,09%)	90 (3,11%)
	Surgery	4452 (73,49%)	331 (80,54%)	140 (71,07%)	2152 (74,31%)
Sample source	Primary	4968 (87,88%)	346 (90,58%)	153 (83,61%)	2376 (88,43%)
	Metastatic	685 (12,12%)	36 (9,42%)	30 (16,39%)	311 (11,57%)
Location of metastatic samples	local recurrence	81 (11,82%)	3 (0,79%)	5 (2,73%)	39 (1,45%)
	liver	266 (38,83%)	11 (2,88%)	11 (6,01%)	108 (4,02%)
	lung	73 (10,66%)	3 (0,79%)	1 (0,55%)	42 (1,56%)
	peritoneal	148 (21,61%)	12 (3,14%)	5 (2,73%)	76 (2,83%)
	nodal	31 (4,53%)	3 (0,79%)	2 (1,09%)	10 (0,37%)
	ovarian	33 (4,82%)	2 (0,52%)	1 (0,55%)	10 (0,37%)
	small intestine	26 (3,8%)	2 (0,52%)	2 (1,09%)	12 (0,45%)
	CNS	5 (0,73%)	0 (0%)	2 (1,09%)	2 (0,07%)
	skin/subcutaneous	22 (3,21%)	0 (0%)	1 (0,55%)	12 (0,45%)
Biopsy vs surgery for primary samples	Biopsy	1374 (25,49%)	72 (19,15%)	44 (26,19%)	648 (24,98%)
	Surgery	4016 (74,51%)	304 (80,85%)	124 (73,81%)	1946 (75,02%)
Biopsy vs surgery for metastatic samples	Biopsy	259 (23,27%)	8 (11,94%)	14 (30,43%)	110 (20,83%)
	Surgery	854 (76,73%)	59 (88,06%)	32 (69,57%)	418 (79,17%)
Geographic region	Dolnośląskie	832 (10,98%)	63 (12,28%)	26 (10,97%)	386 (10,79%)
	Kujawsko-pomorskie	40 (0,53%)	1 (0,19%)	3 (1,27%)	18 (0,50%)
	Lubelskie	18 (0,24%)	1 (0,19%)	0 (0,00%)	9 (0,25%)

Lubuskie	300 (3,96%)	16 (3,12%)	13 (5,49%)	141 (3,94%)
Łódzkie	1129 (14,91%)	59 (11,50%)	39 (16,46%)	542 (15,16%)
Małopolskie	843 (11,13%)	64 (12,48%)	36 (15,19%)	400 (11,19%)
Mazowieckie	752 (9,93%)	45 (8,77%)	22 (9,28%)	358 (10,01%)
Opolskie	304 (4,01%)	20 (3,90%)	9 (3,80%)	152 (4,25%)
Podkarpackie	481 (6,35%)	34 (6,63%)	11 (4,64%)	234 (6,54%)
Podlaskie	6 (0,08%)	0 (0,00%)	0 (0,00%)	1 (0,03%)
Pomorskie	406 (5,36%)	30 (5,85%)	10 (4,22%)	190 (5,31%)
Śląskie	1379 (18,21%)	105 (20,47%)	40 (16,88%)	652 (18,23%)
Warmińsko-mazurskie	219 (2,89%)	14 (2,73%)	7 (2,95%)	102 (2,85%)
Wielkopolskie	356 (4,7%)	28 (5,46%)	11 (4,64%)	164 (4,59%)
Zachodniopomorskie	509 (6,72%)	33 (6,43%)	10 (4,22%)	227 (6,35%)

Right colon (proximal) included caecum, ascending colon, hepatic flexure and transverse colon. Left colon (distal) included splenic flexure, descending and sigmoid colon. MANEC – mixed adeno-neuroendocrine cancer.

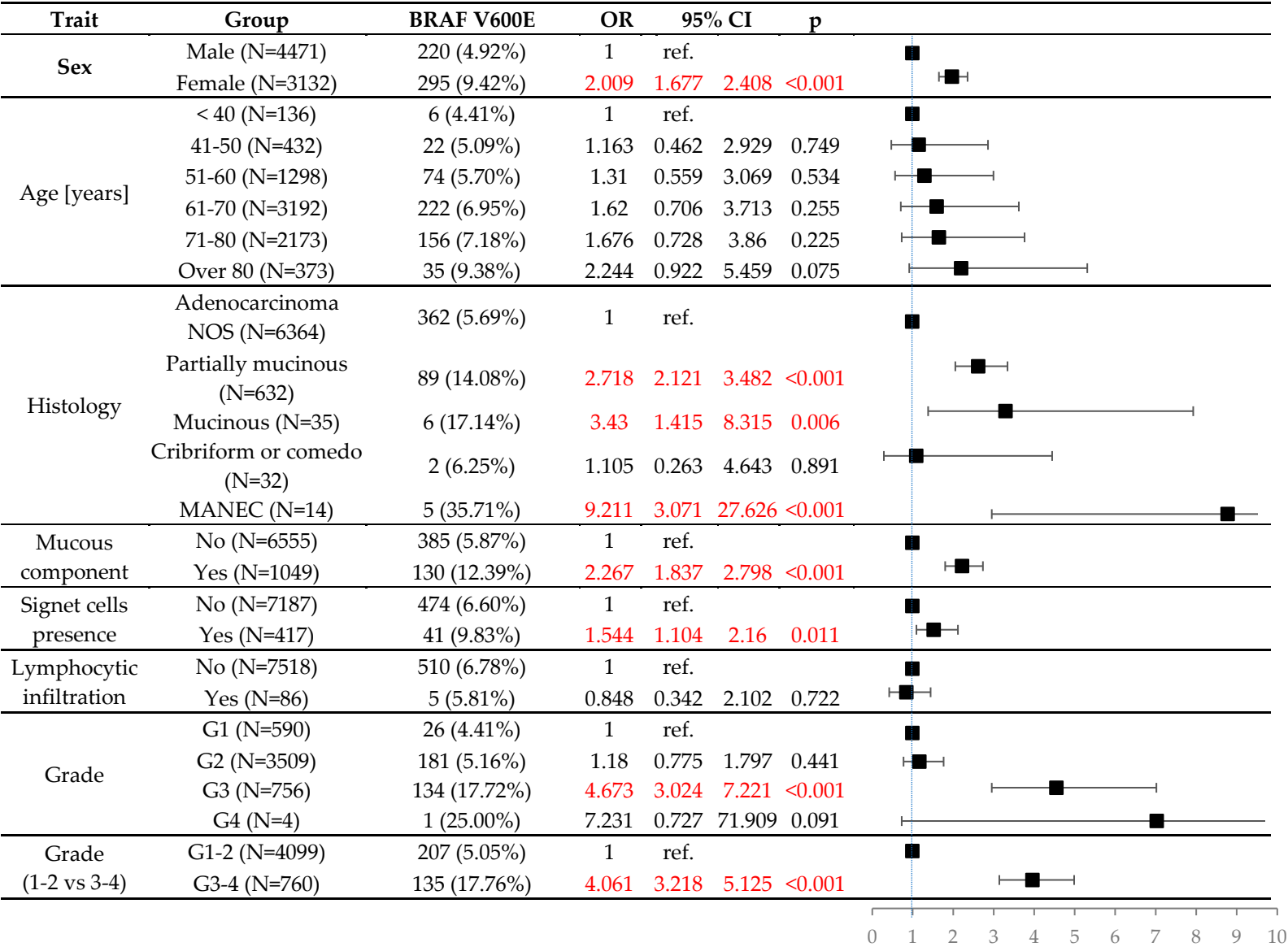
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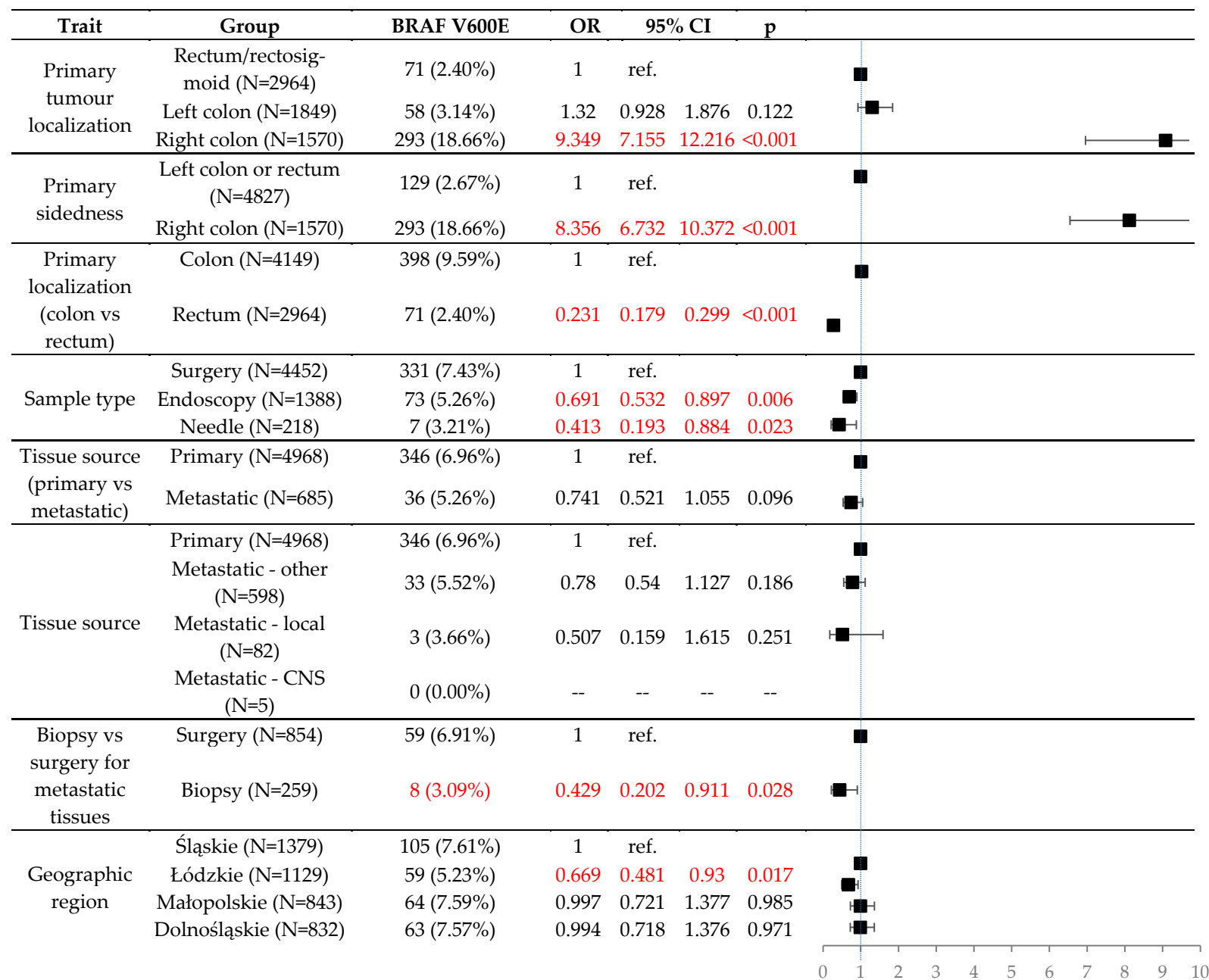
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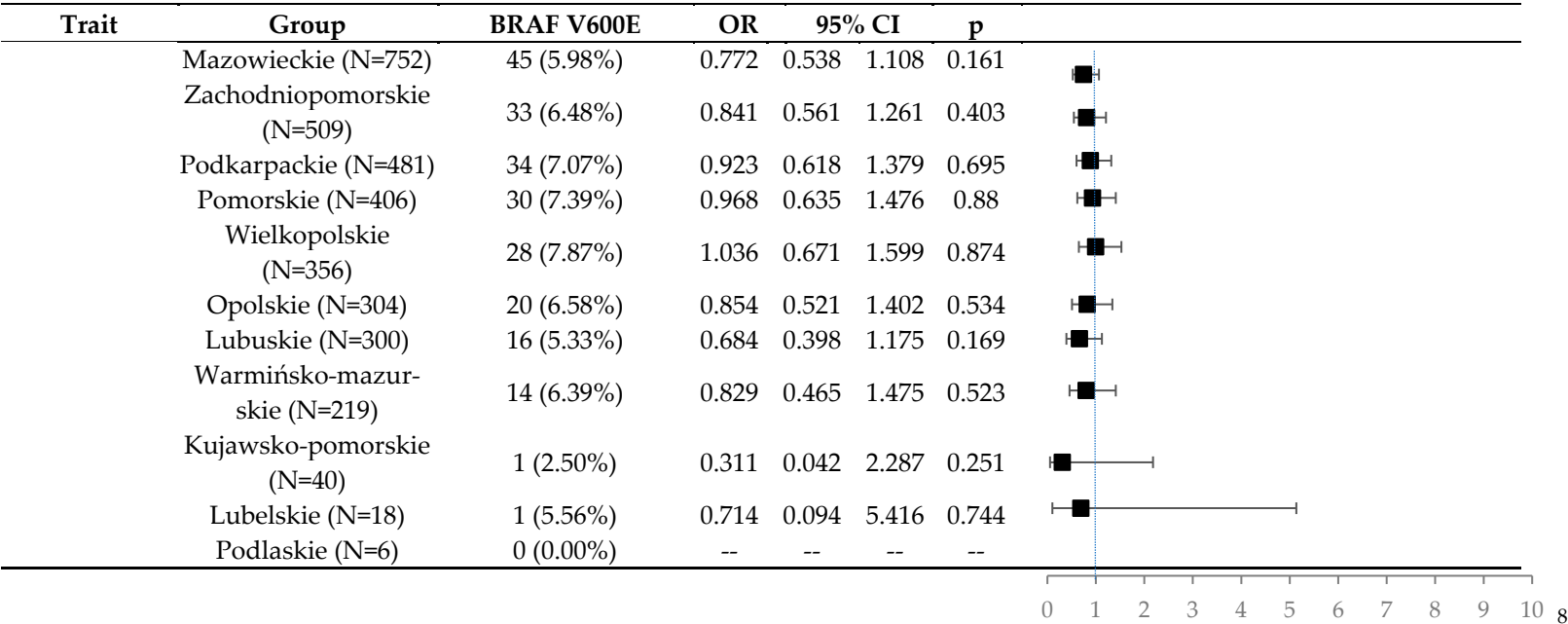
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Table S2. Expanded clinical and pathological factors that affected the rate of *BRAF* V600E mutation.







Right colon (proximal) included caecum, ascending colon, hepatic flexure and transverse colon. Left colon (distal) included splenic flexure, descending and sigmoid colon. Rectum included rectosigmoid tumours. MANEC – mixed adeno-neuroendocrine cancer. p - univariate logistic regressions.

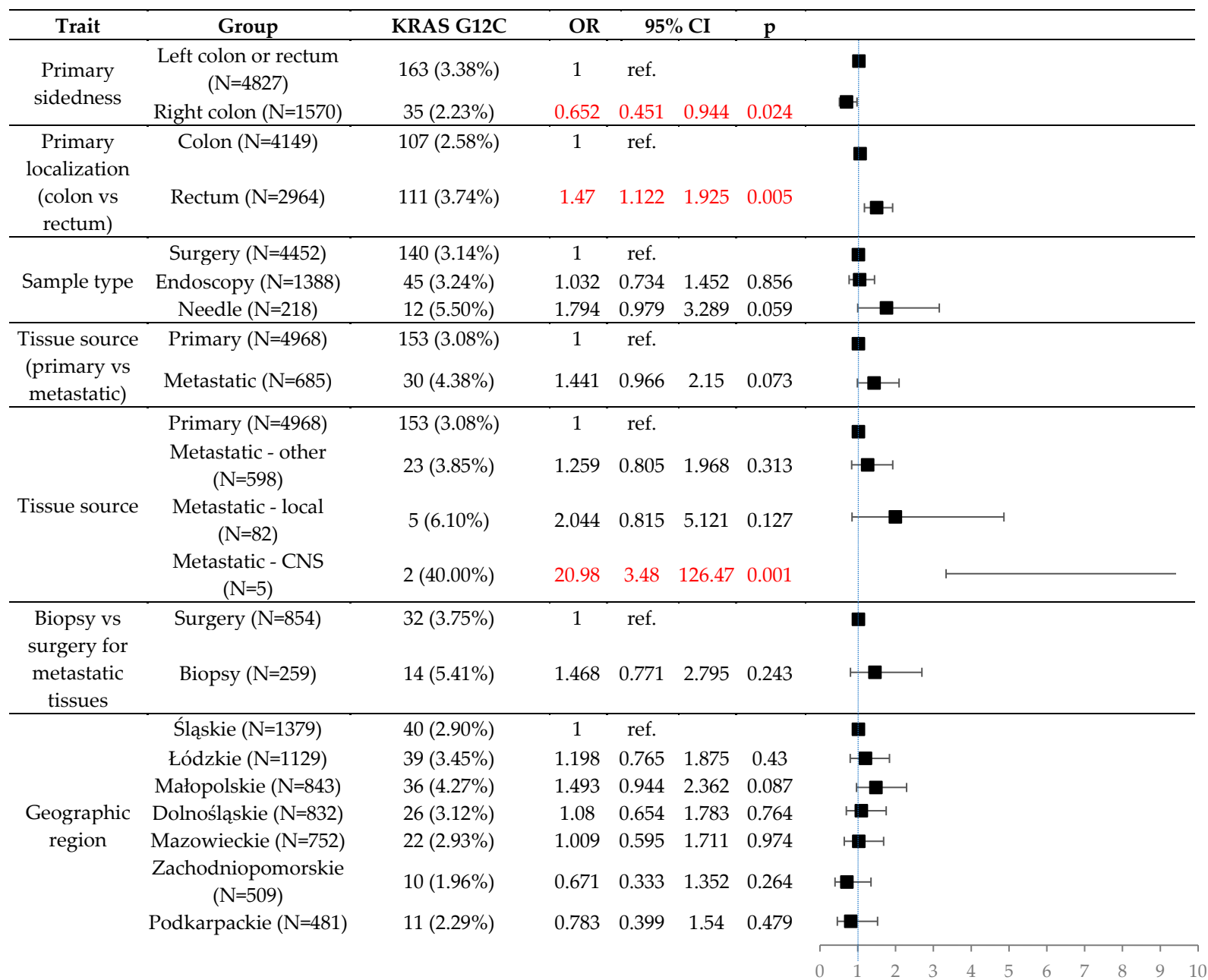
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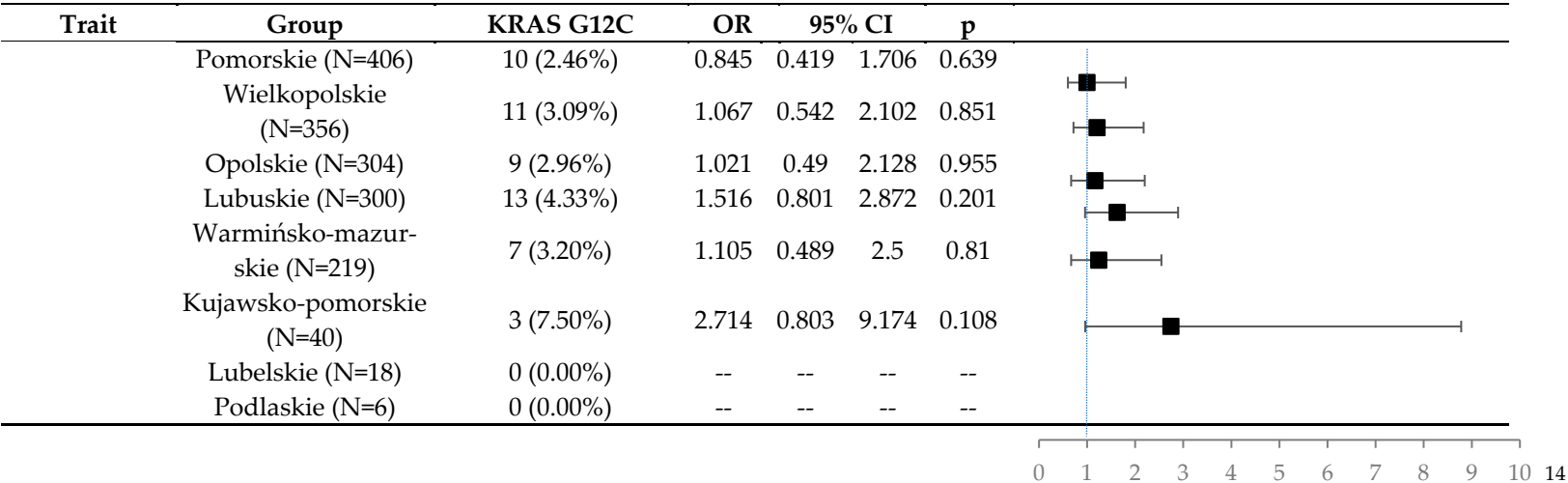
Table S3. Expanded clinical and pathological factors that affected the rate of *KRAS* G12C mutation.

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Trait	Group	KRAS G12C	OR	95% CI		p	
Sex	Male (N=4471)	136 (3.04%)	1	ref.			■
	Female (N=3132)	101 (3.22%)	1.062	0.818	1.38	0.651	■
Age [years]	< 40 (N=136)	6 (4.41%)	1	ref.			■
	41-50 (N=432)	13 (3.01%)	0.672	0.251	1.804	0.43	■
	51-60 (N=1298)	36 (2.77%)	0.618	0.256	1.494	0.285	■
	61-70 (N=3192)	111 (3.48%)	0.781	0.337	1.808	0.563	■
	71-80 (N=2173)	64 (2.95%)	0.657	0.28	1.547	0.337	■
	Over 80 (N=373)	7 (1.88%)	0.414	0.137	1.256	0.119	■
Histology	Partially mucinous (N=632)	23 (3.64%)	1	ref.			■
	Mucinous (N=35)	0 (0.00%)	--	--	--	--	
	Cribriform or comedo (N=32)	2 (6.25%)	1.765	0.398	7.838	0.455	■
	MANEC (N=14)	0 (0.00%)	--	--	--	--	
	Other (N=527)	16 (3.04%)	0.829	0.433	1.586	0.571	■
Mucous component	No (N=6555)	200 (3.05%)	1	ref.			■
	Yes (N=1049)	37 (3.53%)	1.162	0.813	1.66	0.41	■
Signet cells presence	No (N=7187)	223 (3.10%)	1	ref.			■
	Yes (N=417)	14 (3.36%)	1.085	0.626	1.879	0.771	■
Lymphocytic infiltration	No (N=7518)	237 (3.15%)	1	ref.			■
	Yes (N=86)	0 (0.00%)	--	--	--	--	
Grade	G1 (N=590)	17 (2.88%)	1	ref.			■
	G2 (N=3509)	122 (3.48%)	1.214	0.725	2.032	0.46	■
	G3 (N=756)	17 (2.25%)	0.775	0.392	1.532	0.464	■
	G4 (N=4)	0 (0.00%)	--	--	--	--	
Grade (1-2 vs 3-4)	G1-2 (N=4099)	139 (3.39%)	1	ref.			■
	G3-4 (N=760)	17 (2.24%)	0.652	0.392	1.085	0.1	■
Primary tumour localization	Rectum (N=2964)	111 (3.74%)	1	ref.			■
	Left colon (N=1849)	51 (2.76%)	0.729	0.521	1.021	0.066	■
	Right colon (N=1570)	35 (2.23%)	0.586	0.399	0.861	0.007	■

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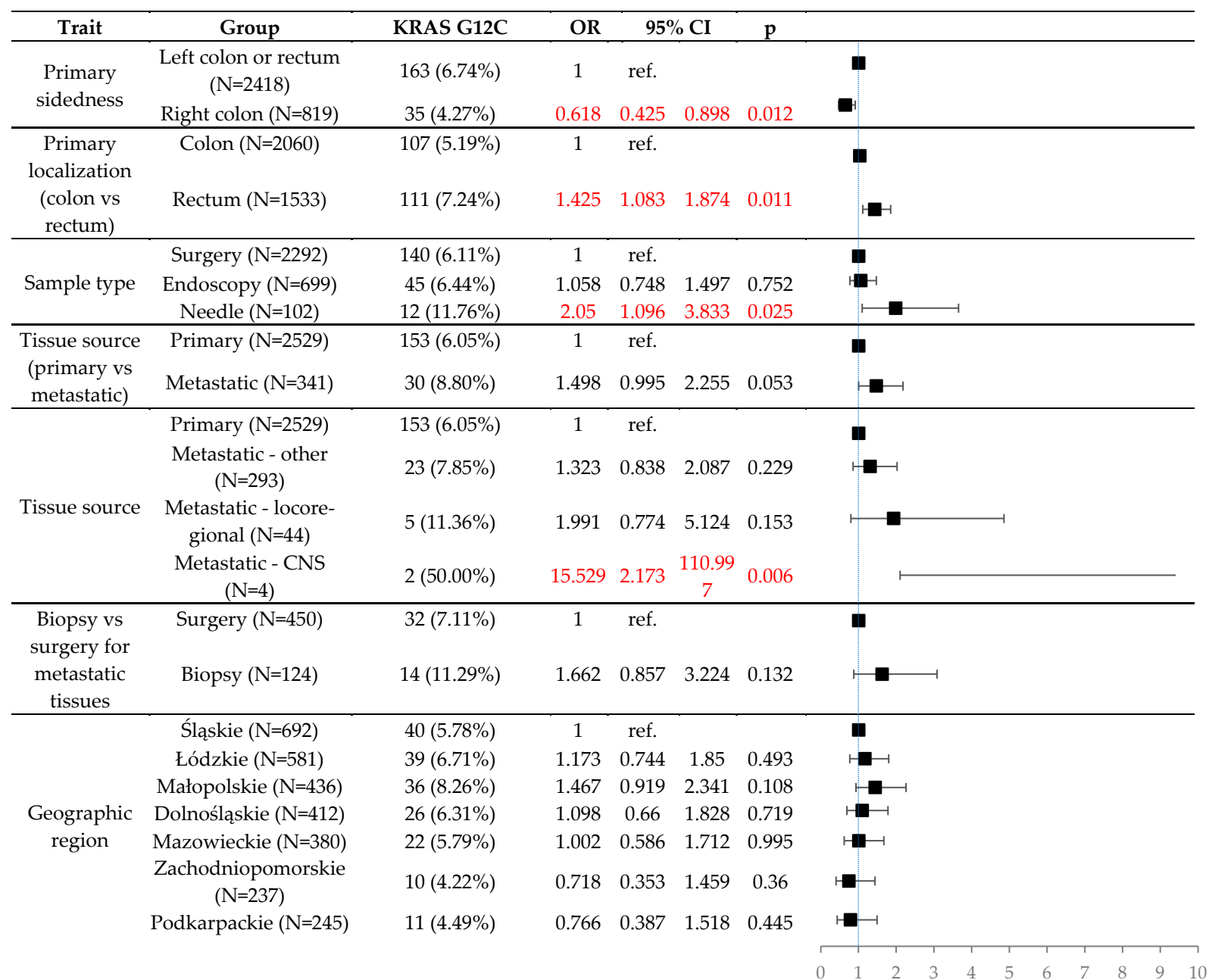
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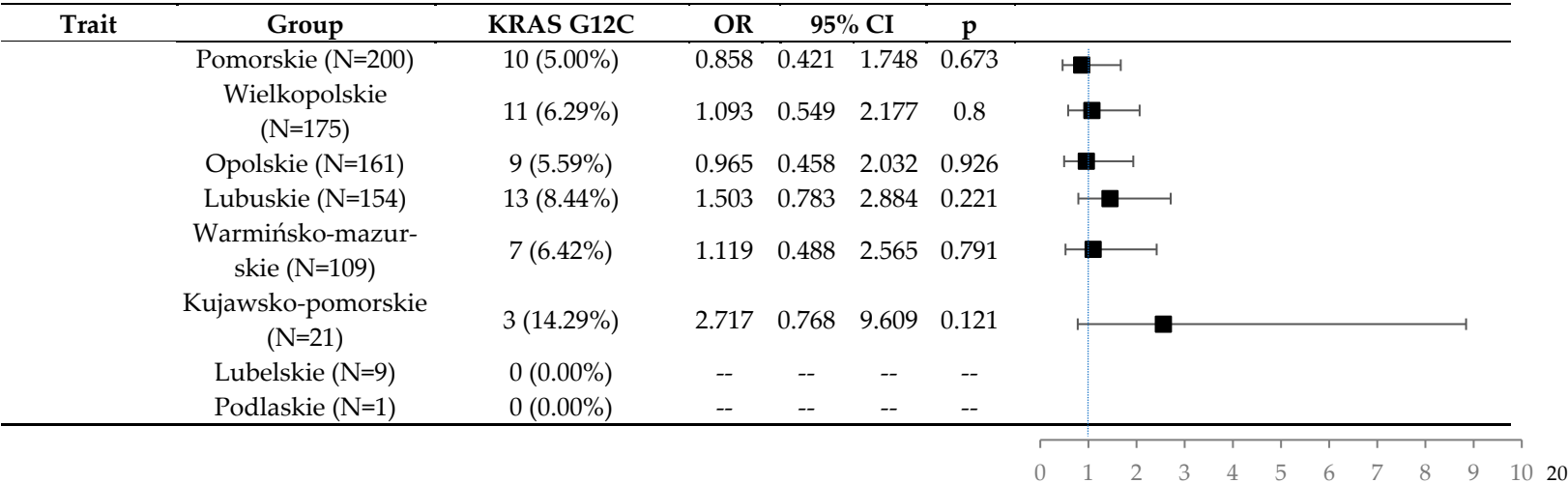
Table S4. Expanded clinical and pathological factors that affected the rate of *KRAS* G12C mutation among other *KRAS* mutations.

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Trait	Group	KRAS G12C	OR	95% CI		p	
Sex	Male (N=2200)	136 (6.18%)	1	ref.			■
	Female (N=1628)	101 (6.20%)	1.004	0.77	1.309	0.978	■
Age [years]	< 40 (N=65)	6 (9.23%)	1	ref.			■
	41-50 (N=203)	13 (6.40%)	0.673	0.245	1.848	0.442	■
	51-60 (N=624)	36 (5.77%)	0.602	0.244	1.488	0.272	■
	61-70 (N=1597)	111 (6.95%)	0.735	0.31	1.739	0.483	■
	71-80 (N=1134)	64 (5.64%)	0.588	0.245	1.414	0.236	■
	Over 80 (N=205)	7 (3.41%)	0.348	0.113	1.074	0.066	■
Histology	Partially mucinous (N=405)	23 (5.68%)	1	ref.			■
	Mucinous (N=10)	0 (0.00%)	--	--	--	--	
	Cribriform or comedo (N=11)	2 (18.18%)	3.691	0.753	18.079	0.107	■
	MANEC (N=2)	0 (0.00%)	--	--	--	--	
	Other (N=292)	16 (5.48%)	0.963	0.499	1.856	0.91	■
Mucous component	No (N=3175)	200 (6.30%)	1	ref.			■
	Yes (N=653)	37 (5.67%)	0.893	0.623	1.282	0.541	■
Signet cells presence	No (N=3580)	223 (6.23%)	1	ref.			■
	Yes (N=248)	14 (5.65%)	0.901	0.517	1.571	0.712	■
Lymphocytic infiltration	No (N=3786)	237 (6.26%)	1	ref.			■
	Yes (N=42)	0 (0.00%)	--	--	--	--	
Grade	G1 (N=316)	17 (5.38%)	1	ref.			■
	G2 (N=1830)	122 (6.67%)	1.256	0.745	2.118	0.392	■
	G3 (N=330)	17 (5.15%)	0.955	0.479	1.906	0.897	■
	G4 (N=1)	0 (0.00%)	--	--	--	--	
Grade (1-2 vs 3-4)	G1-2 (N=2146)	139 (6.48%)	1	ref.			■
	G3-4 (N=331)	17 (5.14%)	0.782	0.466	1.312	0.351	■
Primary tumour localization	Rectum (N=1533)	111 (7.24%)	1	ref.			■
	Left colon (N=876)	51 (5.82%)	0.792	0.562	1.115	0.182	■
	Right colon (N=819)	35 (4.27%)	0.572	0.387	0.845	0.005	■

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