Supplemental materials for:

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Supplementary Table 1. Characteristics and methods of collection.

Characteristic	Data collection
Age at first consultation	Age was calculated based on birthyear as registered in the JGPN data. For all patients, July first was set as their birthdate as only year of birth was available for analysis. Age at first consultation was then calculated. Age was categorized as a non-linear association with duration of the primary care interval was expected.
Sex	Sex was extracted from the JGPN data, in which this is registered.
Socio-economic status score 2010	SES was retrieved from publicly available data from the Netherlands Institute for Social Research,[16] in which status scores are available according to postal code and based on level of education, income and job status. The scores of 2010 were used. Lowest SES score was defined as: SES score of < -1 SD than the Dutch mean of 2010, Medium-low SES score: -1 SD to mean SES score, Medium-high SES score: mean SES score to +1 SD and Highest SES score: > +1 SD higher than Dutch mean.
Registered Comorbidity	Episode lists in the EHRs were used to determine existence of (chronic) comorbidities. To decide on relevance and chronicity of registered episodes, the list of chronic comorbidities in primary care as provided by O'Halloran et al.[17]was used as guidance. In this list included ICPC-codes starting with a "P" were regarded as relevant psychiatric comorbidities. Gastro intestinal comorbidities were all relevant GI related registered comorbidities or conditions: irritable bowel syndrome, reflux disease, oesophagitis, dyspepsia, abdominal pain, peptic ulcer, hiatus or abdominal hernia, benign GI neoplasms/polyps, constipation, chronic diarrhoea, cholelithiasis, diverticulosis and anal fissures.
Registered family history of CRC	Information on family history of colorectal cancer was retrieved from the free text consultation registries in the EHRs from the JGPN

	database.
Consultation frequency in the year preceding first consultation	We used the consultation frequency in the year preceding first consultation as a measure of how frequent a patients generally visits the general practitioner, in other words to identify 'frequent visitors'. Number of GP consultations in the year before the first cancer related consultation was determined by counting all registered physical or phone contacts with the practice, except for repeated prescriptions and registered correspondence with secondary care. Missing consultation registries in patients newly presenting to a GP shortly before first cancer related consultation (n = 1) were considered random, and therefore imputed using single imputation based on age, socio-economic status score and number of chronic comorbidities.
History of malignancy	Presence of a history of malignancy was retrieved from data of the Netherlands Cancer Registry (NCR), in which number of preceding malignancies is available
Main registered symptom at first consultation	Information on symptoms at first consultation was retrieved from the free text consultation registries in the EHRs from the JGPN database. Alarm symptoms: We considered rectal blood loss (all reporting of rectal blood loss, including blood on toilet paper after wiping), anaemia (based on laboratory test results), unintended weight loss (as reported by the patient) and the presence of a palpable tumour as alarm symptoms for colorectal cancer. Changes in bowel habit are often considered alarming, but as data on defaecation pattern in primary care registries usually only indicate status and not change, we decided not to include this alarm symptom. GI symptoms include all GI related, non-alarming symptoms (e.g. abdominal pain, nausea, constipation etc). Other symptoms are all remaining, non-alarming, non-GI symptoms. Presence of haemorrhoids was based on the findings at physical examination as performed and reported by the GP. Information on the disease (date of diagnosis, tumour stage)

	was retrieved from NCR data.
Haemorrhoids at physical examination	Presence of haemorrhoids was based on the findings at physical examination as performed and reported by the GP.
TNM tumour stage at diagnosis	TNM tumour stage at diagnosis was extracted from the NCR database.

Supplementary information. Details of the qualitative data analysis

Thematic analyses for "longest duration" (≥P90)

"Longest duration" was defined as duration equal or longer than the 90th percentile value of IPC duration (≥219 days). Mechanisms leading to times to referral of over the P90 value were extracted from the free text registrations of all consultations preceding referral, which were analysed as a transcribed verbatim of the diagnostic route to referral and the deliberations made by the GP.

To analyse these data we performed open coding, axial coding and selective coding.

Open coding, aimed to identify factors contributing to longest duration, was performed separately by two researchers (NvE, SO) and discussed in the research team in case of any doubt (NvE, SO, CH).

Axial coding was performed after collection of open codes ascribed to delaying factors to define categories.

Finally, selective coding was used to redefine, integrate and connect the categories to reveal underlying relationships between codes and to establish the final themes. Axial and selective coding was performed together by two researchers (NvE, CH).

Disagreement in any of the coding stages was reconciled in research team discussions.