

Supplementary data for:
“Atrial Fibrillation, Anticoagulants, and CRC Outcomes:
A Nationwide 20-Year Study”

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Icelandic Cancer Registry data

The Icelandic Cancer Registry (ICR) data.

Variables obtained from the Icelandic Cancer Registry (ICR) changed over time, from variables collected in the period of 2000-2019, then from 2014-2019 where CRC quality control was started and finally in 2017-2019 with the more complete quality control:

2000-2019

Personal identification number, sex, date of diagnosis, age of diagnosis, death, data of death, ICD-10 code for the CRC, the pathology report with the TNM staging of the tumor and the histopathology of the tumor.

2014-2019

At which hospital did the patient receive CRC treatment, if patient got surgery or biopsy, surgery type, Hospital where surgery was performed, date of operation and if the patient got permanent stoma.

2017-2019

Perineural invasion of the tumor and vascular infiltration of the tumor in the histopathology report and differentiation of the tumor.

All additional variables and variables not covered throughout the study period were collected from the medical records review. All variables from the ICR were also confirmed in the same review.

Supplementary Table 1: Variable definition

Symptoms	Initial patient reported symptom leading to cancer diagnosis. Only displayed primary symptom here.	
Abdominal pain	Any abdominal pain of patient, including low grade pain over a long period up to severe high acuity pain caused by volvulus or perforation.	
Change in bowel movements	Any recent change in patient's bowel movements, including diarrhea, constipation, mixture of both or any other change in frequency, volume etc described by the patient	
Lower gastrointestinal bleeding	Any over signs of bleeding or fresh blood described by the patient or physician diagnosed microcytic anemia leading to CRC diagnosis.	
Other	A compilation of rare symptoms (some due to metastatic disease: Anorectal dysfunction, Aphasia, Back pain, Cancer control, Cough, Dyspnea, Fatigue, Fever, Follow up, Hematuria, hemiparesis, incidental, Itchiness, Lesion on thorax, Unknown, Nausea, Numbness, pathologic fracture, Perforation, Seizure, Vertigo, Weight loss.	
Screening	No formal screening is conducted in Iceland, so this is an informal screening by the request of the patient.	
Discovery	Initial test diagnosing or raising considerate concern for cancer	
Abdominal Radiography	Radiography showing cancer suspicious lesions. Mostly relevant in diagnosing CRCs in 2000-2002	
Colonoscopy	Diagnostic method diagnosing or raising considerate concern for cancer	
Computed Tomography (CT)	Imaging test raising considerate concerns for cancer	
Intraoperative	No suspicion of cancer prior to operation but intraoperatively finding tumor highly suspicious of cancer	
Other	Compilation of rare discoveries of CRCs: Autopsy, Direct Rectal Examination, MRI, PET.	
PAD	No suspicion of cancer prior to surgery or intraoperatively, only finding cancerous cells in the histopathology review.	
Gastrointestinal bleeding event	Any history of lower gastrointestinal bleeding (either	

	overt or microcytic anemia leading to CRC diagnosis) and including occult lower gastrointestinal bleeding at time of first hospital visit connected to CRC – defined as hemoglobin less than 120 and MCV less than 80.	
Hemoglobin		
Mean corpuscular volume (MCV)		
Smoking history	Any patient reported history of smoking over 5 years.	
Alcohol	Any alcohol use as declared by patient.	
Any family history of cancer	Any cancer history (not just CRC history) of a 1° or 2° relative reported by patient	
Warfarin	Warfarin (VKA) use at first hospital visit related to CRC	
DOAC	Any DOAC use at first hospital visit related to CRC	
Indication for Anticoagulation	Physician's reason for having the patient on oral anticoagulation.	
Antiplatelet, Aspirin, Clopidogrel or Ticagrelor	Any use of antiplatelet medication including aspirin, Clopidogrel or Ticagrelor as they were the only antiplatelet medication at use during the study period. Some of the time, patients did use two antiplatelet medications at the same time.	
Tumor stage	Pathological tumor staging or biopsy guided staging with a metastasis on imaging. In case of metastasis less than 3 months after initial pTNM, patients were upstaged to stage IV.	
Perineurial growth	Any signs of perineural growth of cancer cells in the histopathology report.	
Vascular growth	Any signs of vascular or lymphatic vessel growth of cancer cells in the histopathology report.	
Differentiation tumor grade	Cancer cell differentiation in the histopathology report. We report high grade and low grade differentiation, with indecisive or medium grade being upscaled to high grade.	
Mucinous part in tumor	If mucinous part exceeded 50% as reported in the histopathology report.	
Inflammation	Any inflammation as reported in the histopathology report.	
Microsatellite stability	Results of microsatellite stability genetic tests as reported in the histopathology reports. We include results from 2000-2009 and from	

	2014- as it was not routinely performed from 2010-2014.	
Neoadjuvant treatment	Any radio- or chemotherapy or a combination of both that the patient received prior to surgery. If patient did not undergo surgery, the therapy was concluded as adjuvant therapy.	
Adjuvant treatment	Any radio- or chemotherapy or a combination on both that the patient received after surgery or biopsy.	
Adjuvant chemotherapy	Any chemotherapy that a patient underwent after CRC surgery or biopsy	
Adjuvant radiation therapy	Any radiation therapy that patient underwent after CRC biopsy or surgery	
Charlson comorbidity index >3	Comorbidity index that estimates the effects of a patient's other diseases or comorbidities on their risk of death.	
Death	Any cause of death	
Colorectal cancer recurrence	Any recurrence of CRC at any time after the first 3 months of CRC diagnosis.	

Supplementary Table 2: Cause of Death Registry data

Causes of death based on the Cause of Death Registry in Iceland. A text description of ICD-10 codes. Treating physicians in each case ascertain the primary cause of death and write the appropriate ICD-10 code accordingly. A detailed table of the causes of death are presented here:

Cause of Death	n
Colon cancer	784
Rectal cancer	131
Ischemic heart disease	66
Dementia	60
Stroke	44
Congestive heart failure	37
Lung cancer	28
Myocardial infarction	26
COPD	23
Covid-19	19
Prostate cancer	17
Atrial fibrillation	13
Pneumonia	13
Breast cancer	11
Metastatic disease	11
Pancreas cancer	11
Chronic kidney disease	10
Esophageal cancer	10
Parkinson	9
Lymphoma	8
Aortic stenosis	7
Stomach cancer	7
Bladder cancer	6
Diabetes Mellitus type 1 and 2	5
Hypertension	5
Kidney failure	5
Multiple myeloma	5
Alzheimer	4
Cirrhosis	4
Hepatic cancer	4
Head and neck cancer	4
Intestinal perforation	4
Liver cancer	4
Malnutrition	4
Renal cancer	4
Sepsis	4
Thoracic aneurysm	4
Atherosclerosis	3
Cardiomegaly	3
Influenza	3
Melanoma	3
Peripheral vascular disease	3
Ruptured aneurysm	3
Unknown	3
Urinary tract infection	3
Abdominal hernia	2
Aortic aneurysm	2
Cardiac arrest	2
Delirium	2
Diverticulitis	2

Esophageal obstruction	2
Femur fracture	2
Gastroenteritis	2
Heart disease, unspecified	2
Ileus	2
Multiple rib fractures	2
NSTEMI	2
Pulmonary hypertension	2
Skull fracture	2
Subdural hemorrhage	2
Anal cancer	1
Anoxic brain injury	1
Aortic dissection	1
Arrhythmia	1
Arterial embolism	1
Asphyxiation	1
Bile duct cancer	1
Brain cancer	1
Bronchitis	1
Clostridium difficile colitis	1
C250?	1
Cerebral hemorrhage	1
Cervical cancer	1
CLL	1
CMML	1
Connective tissue cancer in abdomen	1
Cystic kidney disease	1
Degenerative nervous system disease	1
Duodenal ulcer	1
DVT	1
Endometrial cancer	1
Foreign body aspiration	1
Gallbladder cancer	1
Gastrointestinal bleeding	1
Hemiperitoneum	1
Hepatic failure	1
Huntington's	1
Hydronephrosis	1
Hyperparathyroidism	1
Hypothermia	1
Infection	1
Intestinal ischemia	1
Intestinal vascular disease	1
Intoxication inhalation	1
Irritation cystitis	1
Motor neuron disease	1
Mouth cancer	1
Myocarditis	1
Obstruction	1
Old age	1
Old MI	1
Ovarian cancer	1
Pancreatitis	1
Primary biliary Cholangitis	1
Pulmonary embolism	1
Pelvis cancer	1
Penis cancer	1
Peptic ulcer	1

Peritoneal adhesions	1
Pneumothorax	1
Poisoning	1
Pulmonary fibrosis	1
Pyelonephritis	1
Rectal abscess	1
Rib fracture	1
Sequelae of stroke	1
Severe obesity	1
Shock	1
Small bowel cancer	1
Soft tissue cancer	1
Stroke sequela	1
Subarachnoid hemorrhage	1
Thrombophlebitis	1
Thyroid cancer	1
Tongue cancer	1
Traumatic brain hemorrhage	1
Traumatic subarachnoid hemorrhage	1
Ulcerative Colitis	1
Vasculitis	1
Venous insufficiency	1
Vertebral fracture	1
Viral enteritis	1