# Intestinal cancer and the risk for other cancer in the same person

Submission date 11/06/2023	Recruitment status No longer recruiting	Prospectively registered		
		☐ Protocol		
Registration date 16/06/2023	Overall study status Completed	Statistical analysis plan		
		[X] Results		
<b>Last Edited</b> 15/06/2023	<b>Condition category</b> Cancer	Individual participant data		

## Plain English summary of protocol

Background and study aims

Disparities between tumors arising via different carcinogenetic pathways have not been studied systematically. This study evaluated the differences in the risk for non-intestinal cancer between patients with intestinal cancer originating from different carcinogenetic statuses.

Who can participate?

Adult patients with histologically confirmed colorectal cancer

What does this study involve?

This is a retrospective cohort study describing the association between intestinal and not intestinal cancer among patients with different carcinogenetic backgrounds. This retrospective European multicenter cohort study included 1706 CRC patients treated between 1986 and 2019, in three different countries.

What are the possible benefits and risks of participating?

The possible benefit is to understand the relationship between different types of cancer in the same patient. There are no risks for participants.

Where is the study run from? Umeå University (Sweden)

When is the study starting and how long is it expected to run for? January 2013 to March 2021

Who is funding the study?

- 1. Faculty of Medicine at Umeå University
- 2. Cancer Foundation Finland
- 3. Cancer Research Foundation in Northern Sweden
- 4. Nordic Cancer Union
- 5. The Northern Healthcare Regional Association

# **Contact information**

## Type(s)

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# Additional identifiers

# Clinical Trials Information System (CTIS)

Nil known

## ClinicalTrials.gov (NCT)

Nil known

#### Protocol serial number

Nil known

# Study information

#### Scientific Title

Sporadic deficient mismatch repair in colorectal cancer increases the risk for non-colorectal malignancy

#### **Acronym**

registerMMR

## **Study objectives**

A higher association between sporadic deficient mismatch repair (dMMR) status and the risk of non-colorectal malignancy in patients with known colorectal cancer (CRC)

# Ethics approval required

Ethics approval required

# Ethics approval(s)

approved 02/12/2014, Regional Medical Review Board in Umeå, Department of Medical Strengthening (Regional etikprövningsnämnden i Umeå Avdelningen fur Medicinsk Forstkning) (Samverkanshuset, C/o Umeå Universitet, Umeå, 90187, Sweden; +46 (0)104750800; registrator@etikprovning.se), ref: 2014-371-31M

# Study design

Multicenter retrospective cohort study

# Primary study design

#### Observational

## Study type(s)

Screening

## Health condition(s) or problem(s) studied

Association between sporadic dMMR status and the risk of non-colorectal malignancy in patients with known colorectal cancer

#### **Interventions**

This study is a retrospective cohort describing the association between intestinal and not intestinal cancer among patients with different carcinogenetic backgrounds. This retrospective European multicenter cohort study included 1706 CRC patients treated between 1986 and 2019, in three different countries. The proficiency (pMMR) or deficiency (dMMR) of mismatch repair was determined by immunohistochemistry. Cases were analyzed for BRAFV600E mutation, and BRAF mutation cases were further analyzed for hypermethylation status in the promotor region of MLH1 in order to distinguish between sporadic and hereditary cases. Scandinavian patients were matched against their respective National Cancer Registries. Thorough scrutiny of medical files was performed for the Czech cohort to identify any non-colorectal malignancy within 20 years prior to or after the diagnosis of CRC. Poisson regression analysis was performed to identify the incidence rate of non-colorectal malignancy. For validation purposes, standardized incidence ratios (SIR) were calculated for each cancer reported, adjusted for age, year, and sex.

## Intervention Type

Other

# Primary outcome(s)

The risk for non-colorectal malignancy before and after this diagnosis, compared to patients with different MMR tumors is measured using Incidence Rate Ratio (IRR) in both the univariable and multivariable analyses at one timepoint

# Key secondary outcome(s))

Standardized incidence ratios (SIR) are calculated for each of the cancer forms reported (patients with pMMR and dMMR separately) and adjusted for sex, year (in one-year classes), and age (in five-year classes) at one timepoint

# Completion date

02/03/2021

# **Eligibility**

# Key inclusion criteria

- 1. Histologically confirmed CRC
- 2. Stage confirmed and transformed to the American Joint Committee on Cancer (AJCC) TNM classification
- 3. Available clinical and pathological data regarding the course of the disease and demographic data

# Participant type(s)

**Patient** 

# Healthy volunteers allowed

No

## Age group

Mixed

## Lower age limit

18 years

## Upper age limit

100 years

#### Sex

All

## Total final enrolment

1706

# Key exclusion criteria

- 1. Patients younger than 18 years
- 2. Inconclusive immunohistochemical analysis (IHC) or missing data

## Date of first enrolment

29/10/2015

#### Date of final enrolment

12/01/2021

# Locations

## Countries of recruitment

Czech Republic

**Finland** 

Sweden

# Study participating centre Umeå University hospital

Daniel Naezéns väg Umeå Sweden 907 37

# Study participating centre

# Helskinki University Hospital Department of Surgery

Haartmaninkatu 8 P.O. Box 63 Helsinki Finland 00014

Study participating centre
Masaryk Memorial Cancer Institute
Žlutý kopec 543/7
Brno
Czech Republic
60200

# Sponsor information

## Organisation

Cancer Research Foundation in Northern Sweden (Cancerforskningsfonden i Norrland)

# Funder(s)

## Funder type

University/education

#### **Funder Name**

Medicinska fakulteten, Umeå Universitet

## Alternative Name(s)

Faculty of Medicine at Umeå University, Faculty of Medicine, Umeå University, Faculty of Medicine, Medicinska fakulteten

#### **Funding Body Type**

Private sector organisation

## **Funding Body Subtype**

Universities (academic only)

## Location

Sweden

#### **Funder Name**

Syöpäsäätiö

#### Alternative Name(s)

Cancer Foundation Finland, Cancerstiftelsen

## **Funding Body Type**

Private sector organisation

## **Funding Body Subtype**

Trusts, charities, foundations (both public and private)

#### Location

Finland

#### **Funder Name**

Cancer Research Foundation in Northern Sweden

#### Alternative Name(s)

Northern Sweden Cancer Foundation

#### **Funding Body Type**

Private sector organisation

## **Funding Body Subtype**

Trusts, charities, foundations (both public and private)

#### Location

Sweden

#### Funder Name

Nordic Cancer Union

#### **Funder Name**

Northern Healthcare Regional Association

# **Results and Publications**

# Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from Ioannis Gkekas, ioannis.gkekas@umu.se. The type of data that will be shared is completely anonymization for every variable and includes sex, age, cancer stage, and type of

cancer. These data will be available immediately. Consent from participants was not required or obtained. Ethical and legal restrictions are in concordance with the ethical approval obtained.

# IPD sharing plan summary

Available on request

# **Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Thesis results	Doctoral thesis; study V	21/05/2021	15/06/2023	No	No