



Low-Dose Aspirin and Prevention of Colorectal  
Cancer:  
Evidence From a Nationwide Registry-Based Cohort  
in Norway

# INTRODUCTION

- **colorectal cancer (CRC):**
- third highest incidence rate
- second highest mortality rate
- Risk factors:
  - \_ physical inactivity
  - \_ overweight and obesity
  - \_ alcohol consumption
  - \_ cigarette smoking
  - \_ poor diet

# METHODS

- **Study population and design:**
- registry-based cohort study: individual aged 18-79 years old
- Excluded individuals with a history of invasive cancer
- followed up participants until
  - \_ the earliest date among CRC diagnosis
  - \_ death
  - \_ emigration
  - \_ end of follow up

# METHODS

- **Data sources:**
  - Cancer Registry of Norway (CRN)
  - Norwegian Prescription Database (NorPD)
  - Cause of Death Registry
  - Statistics Norway

# METHODS

- **Exposure assessment:**
  - never-user
  - current user
  - past user

# METHODS

- **Outcome assessment:**
- Site of cancer:
  - \_ proximal colon
  - \_ distal colon
  - \_ rectum
- Stage of cancer:
  - \_ localized
  - \_ regionally advanced
  - \_ metastatic

# METHODS

- **Statistical analysis:**
  - descriptive statistics
  - **Age:** <70y , >70y
  - **Aspirin dose:**
    - \_ never use
    - \_ current user: 75mg , 160 mg
    - \_ past user: 75mg , 160 mg
  - **Duration of using:**
    - \_ never use
    - \_ current user: <3y , 3-5y , >5y
    - \_ past user: <3y , 3-5y , >5y



# RESULTS:

- 38,577 (1.8%) were diagnosed with CRC
- Low-dose aspirin use was more frequent in
  - \_ male individuals
  - \_ older individuals
  - \_ individuals with lower education, lower income
  - \_ users of antithrombotics, antihypertensives, cardiac therapy agents, statins, antidiabetics, nonsteroidal antiinflammatory drugs, antidepressants, and menopausal hormone therapy

# RESULTS:

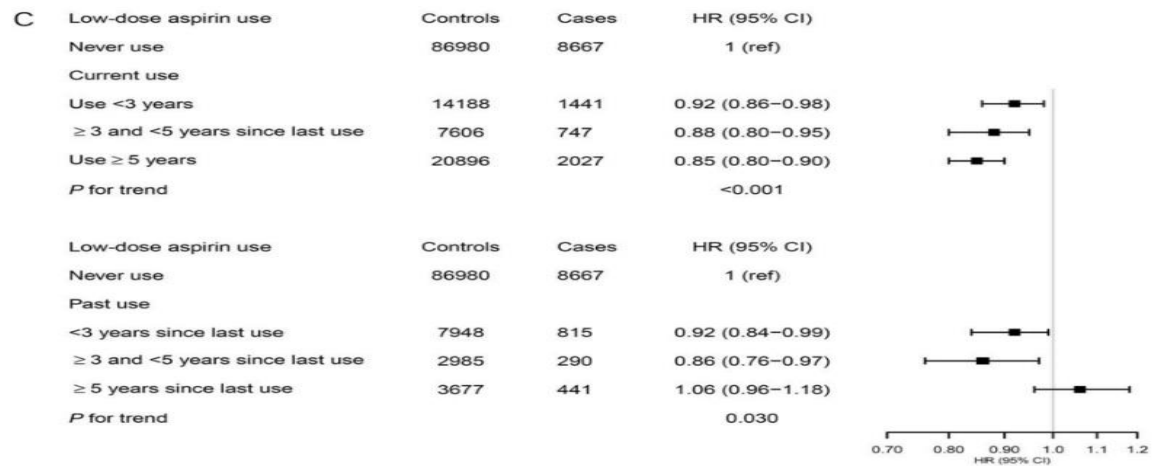
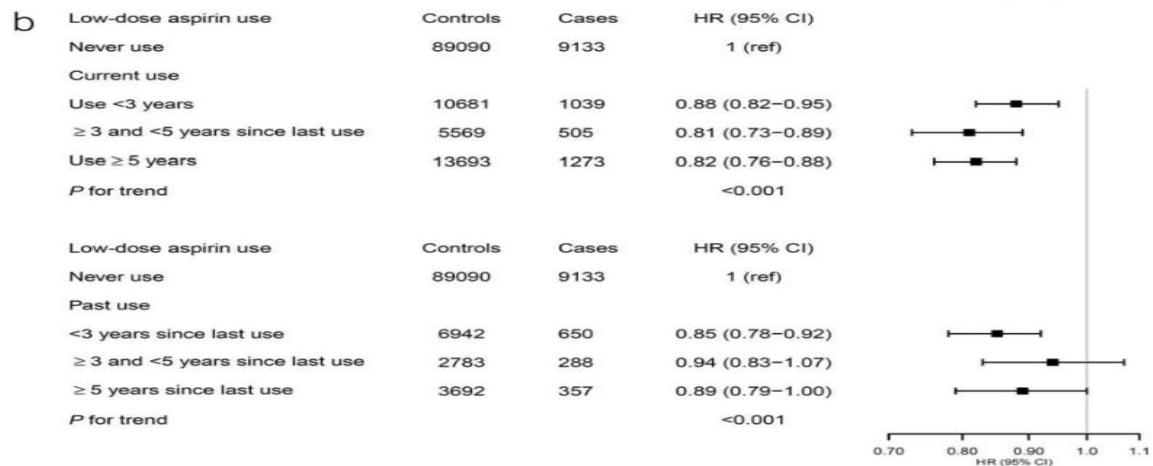
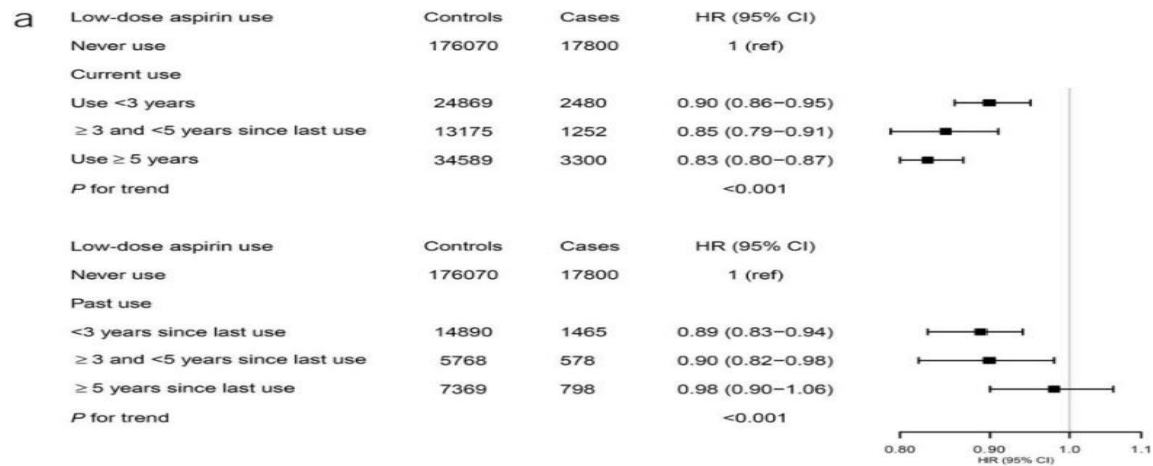
- low-dose aspirin use vs never use were associated with a lower CRC risk (13%) in:
  - \_ Both **current** use (HR 0.87) and **past** use (HR 0.94)
  - \_ **female** (HR 0.85) and **male** (HR 0.88)
  - \_ **younger** than 70 years (HR 0.86) and 70 years or **older** (HR 0.88)
  - \_ In **proximal** colon (HR 0.86), **distal** colon (HR 0.89), and rectum (HR 0.95)
  - \_ **metastatic** CRC (HR 0.79) , **regionally advanced** (HR 0.89) , **localized** ( HR 0.93)
  - \_ use of **160 mg** tablets (HR 0.81) , use of **75 mg** tablets (HR 0.88)

# RESULTS:

- The CRC risk decreased as the duration of low-dose aspirin use increased :
  - \_ 9% decrease for <3 years
  - \_ 15% for 3 - 5 years
  - \_ 16% decrease for >5 years

**Table 2. Association between use of low-dose aspirin and incidence of colorectal cancer in Norway, 2004–2018, in the cohort population overall and by sex**

	Overall population			Female individuals			Male individuals		
	Cases	Person-years	HR <sup>a</sup> (95% CI)	Cases	Person-years	HR <sup>a</sup> (95% CI)	Cases	Person-years	HR <sup>a</sup> (95% CI)
CRC									
Never use	26,365	16,503,146	1 (ref.)	13,338	8,762,033	1 (ref.)	13,027	7,741,113	1 (ref.)
Current use	9,052	3,449,515	0.87 (0.84–0.90)	3,571	1,445,128	0.85 (0.82–0.89)	5,481	2,004,387	0.88 (0.85–0.92)
Past use	3,160	1,074,427	0.94 (0.90–0.98)	1,432	540,093	0.92 (0.86–0.97)	1,728	534,334	0.96 (0.90–1.01)
By CRC site									
Proximal colon									
Never use	10,352	16,503,146	1 (ref.)	6,099	8,762,033	1 (ref.)	4,253	7,741,113	1 (ref.)
Current use	3,906	3,449,515	0.87 (0.83–0.91)	1,892	1,445,128	0.86 (0.81–0.91)	2,014	2,004,387	0.88 (0.82–0.94)
Past use	1,438	1,074,427	0.95 (0.89–1.01)	787	540,093	0.95 (0.87–1.03)	651	534,334	0.95 (0.86–1.04)
Distal colon									
Never use	6,449	16,503,146	1 (ref.)	3,042	8,762,033	1 (ref.)	3,407	7,741,113	1 (ref.)
Current use	2,164	3,449,515	0.85 (0.80–0.91)	721	1,445,128	0.83 (0.75–0.91)	1,443	2,004,387	0.86 (0.79–0.93)
Past use	762	1,074,427	0.94 (0.87–1.02)	304	540,093	0.94 (0.83–1.07)	458	534,334	0.93 (0.84–1.04)
Rectum									
Never use	9,072	16,503,146	1 (ref.)	3,934	8,762,033	1 (ref.)	5,138	7,741,113	1 (ref.)
Current use	2,815	3,449,515	0.90 (0.85–0.95)	873	1,445,128	0.87 (0.79–0.94)	1,942	2,004,387	0.92 (0.86–0.98)
Past use	865	1,074,427	0.90 (0.84–0.97)	291	540,093	0.81 (0.71–0.92)	574	534,334	0.97 (0.88–1.06)
By CRC stage									
Localized									
Never use	4,569	16,503,146	1 (ref.)	2,338	8,762,033	1 (ref.)	2,231	7,741,113	1 (ref.)
Current use	1,923	3,449,515	0.94 (0.87–1.00)	742	1,445,128	0.91 (0.83–1.01)	1,181	2,004,387	0.95 (0.86–1.04)
Past use	684	1,074,427	1.05 (0.96–1.15)	305	540,093	1.02 (0.89–1.16)	379	534,334	1.07 (0.95–1.21)
Regionally advanced									
Never use	13,978	16,503,146	1 (ref.)	7,164	8,762,033	1 (ref.)	6,814	7,741,113	1 (ref.)
Current use	4,830	3,449,515	0.89 (0.85–0.92)	1,971	1,445,128	0.88 (0.83–0.93)	2,859	2,004,387	0.89 (0.84–0.94)
Past use	1,596	1,074,427	0.91 (0.86–0.96)	723	540,093	0.87 (0.80–0.95)	873	53,334	0.94 (0.87–1.01)
Metastatic									
Never use	6,486	16,503,146	1 (ref.)	3,166	8,762,033	1 (ref.)	3,320	7,741,113	1 (ref.)
Current use	1,782	3,449,515	0.79 (0.74–0.84)	646	1,445,128	0.75 (0.68–0.83)	1,136	2,004,387	0.81 (0.74–0.88)
Past use	628	1,074,427	0.88 (0.80–0.96)	274	540,093	0.88 (0.77–1.00)	354	534,334	0.88 (0.78–0.99)
By aspirin dose									
Never use									
Never use	26,365	16,503,146	1 (ref.)	13,338	8,762,033	1 (ref.)	13,027	7,741,113	1 (ref.)
Aspirin 75 mg									
Current use	5,786	2,242,802	0.88 (0.85–0.91)	2,428	988,438	0.87 (0.83–0.91)	3,358	1,254,364	0.90 (0.86–0.94)
Past use	2,128	765,744	0.93 (0.88–0.97)	1,006	400,625	0.90 (0.84–0.97)	1,122	365,119	0.95 (0.89–1.01)
Aspirin 160 mg									
Current use	1,522	622,084	0.81 (0.77–0.85)	505	229,586	0.77 (0.70–0.85)	1,017	392,498	0.82 (0.77–0.88)
Past use	601	191,726	0.96 (0.88–1.04)	248	86,716	0.97 (0.85–1.10)	353	105,010	0.94 (0.85–1.05)



# Mechanism:

- Higher probability of bleeding
- visit physicians more
- ???

# References:

1. Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2021;71(3):209–49.
- 2. Davidson KW, Barry MJ, Mangione CM, et al. Screening for colorectal cancer: US Preventive Services Task Force recommendation statement. *JAMA* 2021;325(19):1965–77.
- 3. Benson VS, Atkin WS, Green J, et al. Toward standardizing and reporting colorectal cancer screening indicators on an international level: The International Colorectal Cancer Screening Network. *Int J Cancer* 2012; 130(12):2961–73.
- 4. Rabeneck L, Chiu HM, Senore C. International perspective on the burden of colorectal cancer and public health effects. *Gastroenterology* 2020; 158(2):447–52.
- 5. World Cancer Research Fund 2018. Diet, Nutrition, Physical Activity and Cancer: A Global Perspective. The Third Expert Report, 2018 (<https://www.wcrf.org/dietandcancer/cancers>).
- 6. Katona BW, Weiss JM. Chemoprevention of colorectal cancer. *Gastroenterology* 2020;158(2):368–88.
- 7. Bosetti C, Santucci C, Gallus S, et al. Aspirin and the risk of colorectal and other digestive tract cancers: An updated meta-analysis through 2019. *Ann Oncol* 2020;31(5):558–68.
- 8. Wang L, Zhang R, Yu L, et al. Aspirin use and common cancer risk: A meta-analysis of cohort studies and randomized controlled trials. *Front Oncol* 2021;11:690219.
- 9. Guo CG, Ma W, Drew DA, et al. Aspirin use and risk of colorectal cancer among older adults. *JAMA Oncol* 2021;7(3):428–35.
- 10. Chan AT, Giovannucci EL, Meyerhardt JA, et al. Long-term use of aspirin and nonsteroidal anti-inflammatory drugs and risk of colorectal cancer. *JAMA* 2005;294(8):914–23.
- 11. Larsson SC, Giovannucci E, Wolk A. Long-term aspirin use and colorectal cancer risk: A cohort study in Sweden. *Br J Cancer* 2006;95(9):1277–9.
- 12. McNeil JJ, Gibbs P, Orchard SG, et al. Effect of aspirin on cancer incidence and mortality in older adults. *J Natl Cancer Inst* 2021;113(3):258–65.
- 13. ASCEND Study Collaborative Group; Bowman L, Mafham M, et al. Effects of aspirin for primary prevention in persons with Diabetes mellitus. *N Engl J Med* 2018;379(16):1529–39.

Thanks for your attention! 😊