

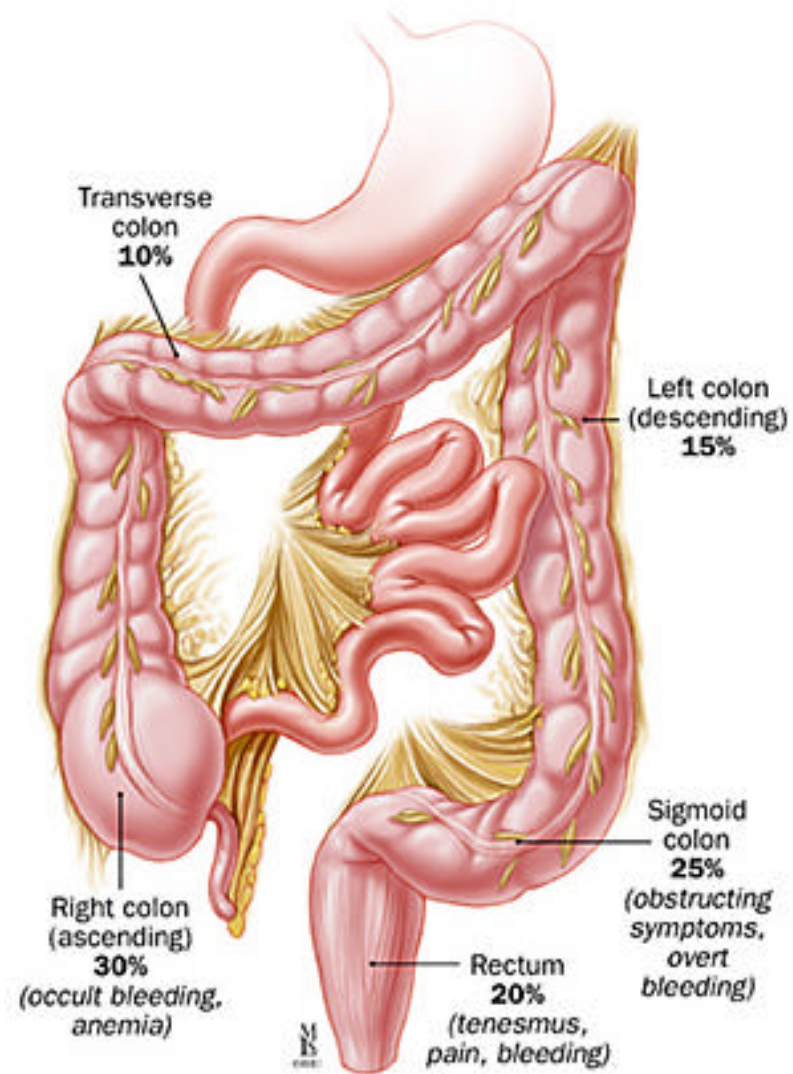
Colorectal Cancer

EPIDEMIOLOGY

Simon De Gabriele

Epidemiology

The Colon



Frequency and location of colon cancers

Epidemiology

The Colon

- A gradual shift toward right-sided or proximal colon cancers has been observed both in the United States ^{1,2,3} and internationally ^{4,5}
- The greatest increase in incidence is in caecal primaries^{6,7}.

- 1) Howe HL; Wu X; Ries LA; Cokkinides V; Ahmed F; Jemal A; Miller B; Williams M; Ward E; Wingo PA; Ramirez A; Edwards BK - Annual report to the nation on the status of cancer, 1975-2003, featuring cancer among U.S. Hispanic/Latino populations.; Cancer. 2006 Oct 15;107(8):1711-42.
- 2) Troisi RJ; Freedman AN; Devesa SS - Incidence of colorectal carcinoma in the U.S.: an update of trends by gender, race, age, subsite, and stage, 1975-1994.; Cancer 1999 Apr 15;85(8):1670-6.
- 3) Jessup JM; McGinnis LS; Steele GD Jr; Menck HR; Winchester DP - The National Cancer Data Base. Report on colon cancer.; Cancer 1996 Aug 15;78(4):918-26.
- 4) Thorn M; Bergstrom R; Kressner U; Sparen P; Zack M; Ekblom A - Trends in colorectal cancer incidence in Sweden 1959-93 by gender, localization, time period, and birth cohort.; Cancer Causes Control 1998 Mar;9(2):145-52.
- 5) Stewart RJ; Stewart AW; Turnbull PR; Isbister WH - Sex differences in subsite incidence of large-bowel cancer.; Dis Colon Rectum 1983 Oct;26(10):658-60.
- 6) Mamazza J; Gordon PH - The changing distribution of large intestinal cancer.; Dis Colon Rectum 1982 Sep;25(6):558-62.
- 7) Vukasin AP; Ballantyne GH; Flannery JT; Lerner E; Modlin IM - Increasing incidence of cecal and sigmoid carcinoma. Data from the Connecticut Tumor Registry.; Cancer 1990 Dec 1;66(11):2442-9.

International Numbers

- The 3rd most common cancer worldwide after lung and breast cancer.
- New cases worldwide increased rapidly since 1975:
 - 1975 – 500,000 new cases
 - 2000 – 783,000 new cases ¹
- Now more than 940,000 new cases and nearly 500,000 deaths reported each year worldwide. ²

1) P.Boyle & J. S. Langman - ABC of Colorectal Cancer; *BMJ* 2000;321:805-808
(30 September)

2) World Health Organisation, 2003

Epidemiology

- Gender
- Age
- Race & Ethnicity
- Geography

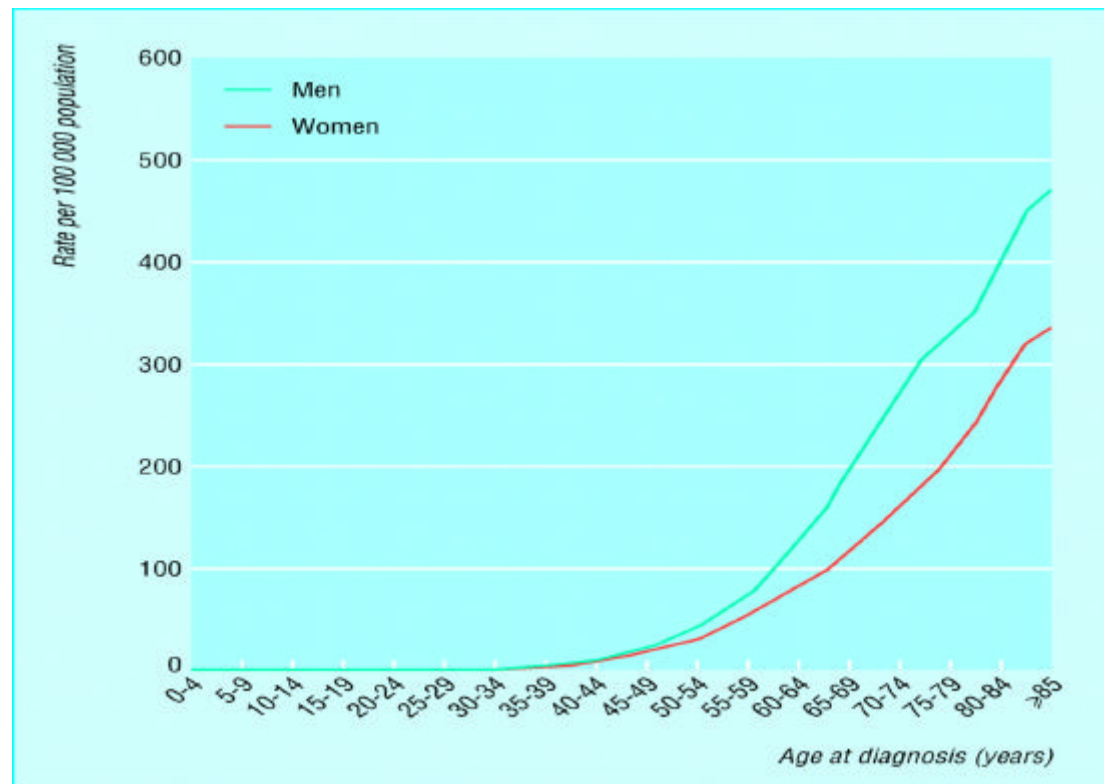
Epidemiology

- Gender
- Age
- Race & Ethnicity
- Geography

Epidemiology

Gender

- Males have a 35% higher incidence and mortality rate, than women, for colorectal cancer.



Estimated incidence of colorectal cancer in United Kingdom, by age and sex, 1995

Epidemiology

Gender

- Rectal cancer is more common in males than females with a ratio of 1.7:1.
- Colon cancer is slightly more prevalent in women compared to men with a ratio of 1.2:1
- Worldwide, colorectal cancer represents 9.4% of all incident cancer in men and 10.1% in women.¹

1) P.Boyle & J. S. Langman - ABC of Colorectal Cancer; *BMJ* 2000;321:805-808 (30 September)

Epidemiology

Gender

- The incidence rates for cancer of the ascending colon have increased, particularly in women.¹
- Worldwide, the crude mortality rate from colorectal cancer (CRC) is 8.9 per 1000 people for men and 8.1 for women.
(These rates vary from 4.6 and 3.9, respectively, in less developed regions to 27.5 and 25.1, respectively, in more developed regions).²

1) Howe HL; Wu X; Ries LA; Cokkinides V; Ahmed F; Jemal A; Miller B; Williams M; Ward E; Wingo PA; Ramirez A; Edwards BK - Annual report to the nation on the status of cancer, 1975-2003, featuring cancer among U.S. Hispanic/Latino populations.; *Cancer*. 2006 Oct 15;107(8):1711-42.

2) Parkin DM, Bray F, Ferlay J, Pisani P. Estimating the world cancer burden: Globocan 2000. *Int J Cancer* 2001;**94**(2):153-

Epidemiology

- Gender
- Age
- Race & Ethnicity
- Geography

Epidemiology

Age

- Age is a major risk factor for CRC.¹
- A rare diagnosis before the age of 40.¹
- Incidence begins to increase significantly between the ages of 40 and 50, and age-specific incidence rates increase in each succeeding decade thereafter.¹

1) Eddy DM, Screening for colorectal cancer; Ann Intern Med 1990 Sep 1;113(5):373-84.

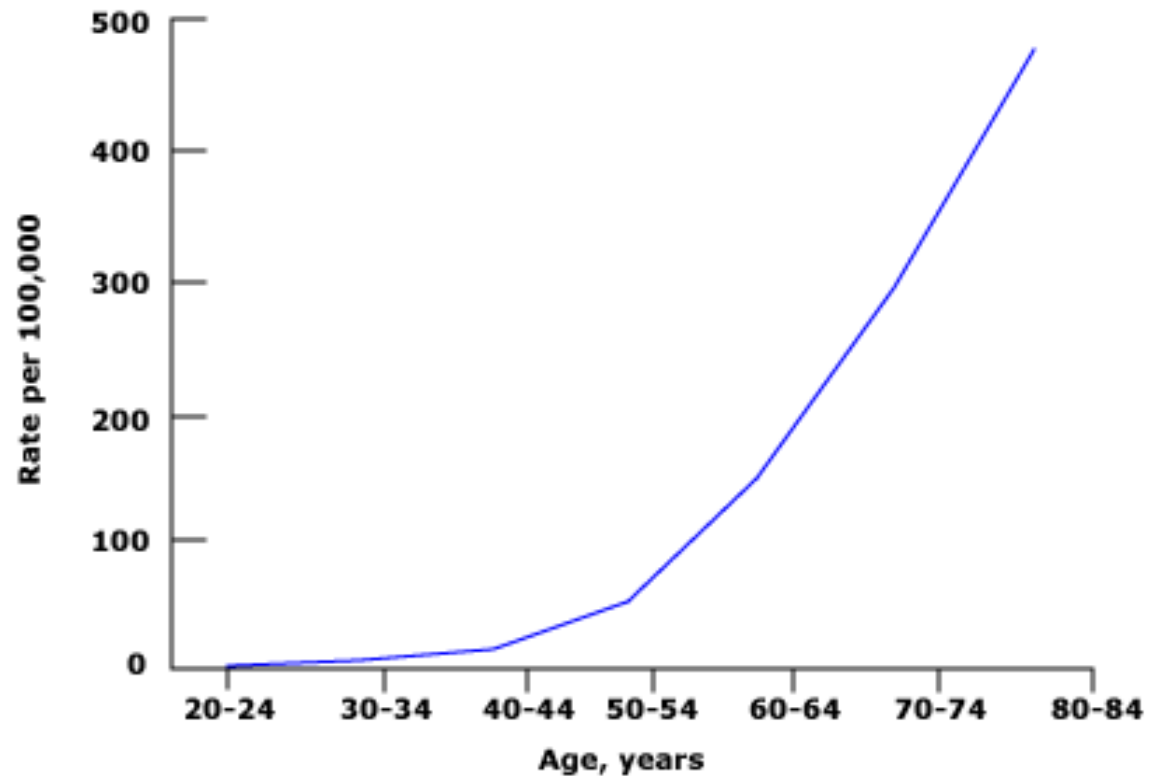
Epidemiology

Age

- 90% of cases of CRC occur after age 50.
- Incidence is higher in patients with specific inherited conditions that predispose them to the development of CRC
- The median age of presentation of colon cancer varies according to the country. In the United States the median age at presentation is 72 years.

Epidemiology

Age



The age-specific incidence of colorectal cancer in the general population was measured between 1988 and 1992 in men and women of all races. Data from Surveillance, Epidemiology, and End Results (SEER) Program, 1973-1992.

Epidemiology

- Gender
- Age
- **Race & Ethnicity**
- Geography

Epidemiology

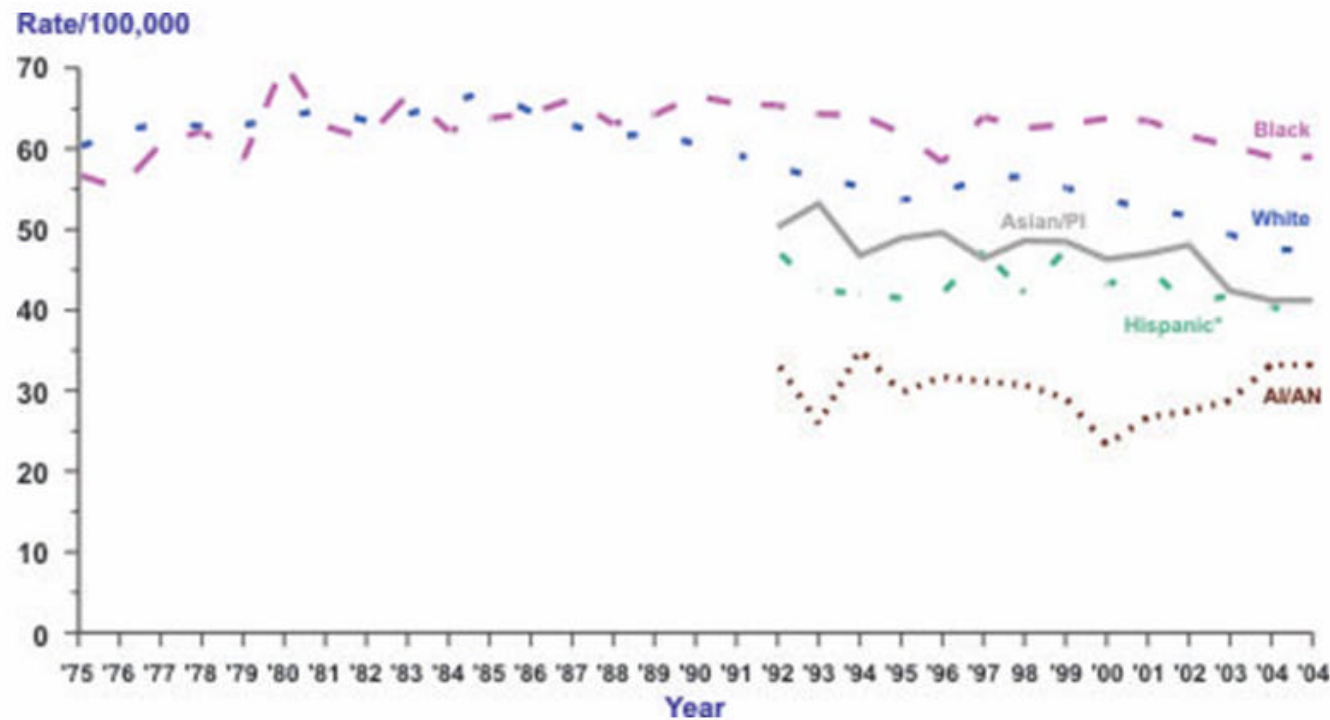
Race & Ethnicity

- Different populations worldwide have a different incidence of colorectal cancer.
- Environmental factors, defined broadly to include ill defined cultural, social, and lifestyle practices, play a major part in the aetiology of the disease.
- As much as 70-80% of colorectal cancers may owe their appearance to environmental factors.
- Groups of migrants quickly acquire the patterns of the new community, often starting within one generation of arrival.

Epidemiology

Race & Ethnicity

Colorectal Cancer SEER Incidence Rates[†] by Race and Ethnicity, U.S., 1975–2004[‡]



*The group, or category, called "Hispanic" may be included in other categories like White, Black, American Indian/Alaska Native (AI/AN), and Asian/Pacific Islander (Asian/PI).

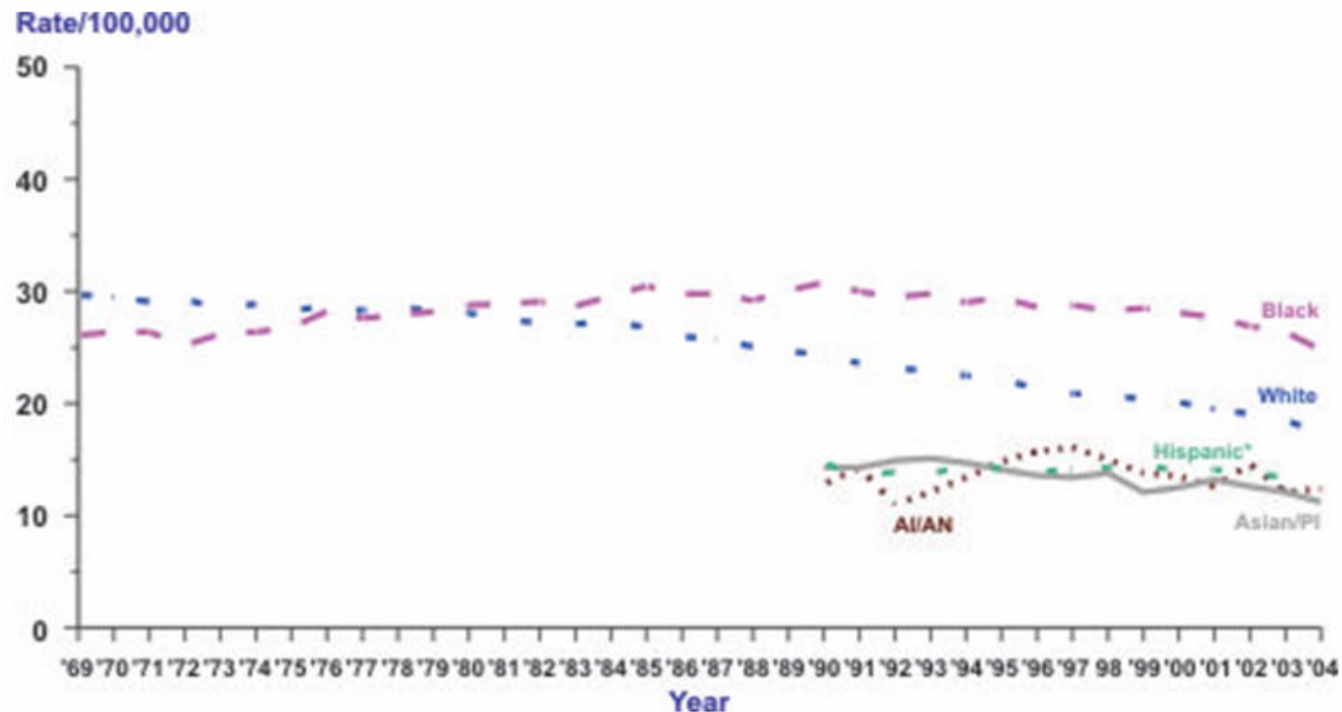
[†]Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.

[‡]Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, NCI

Epidemiology

Race & Ethnicity

Colorectal Cancer U.S. Death Rates[†] by Race and Ethnicity, 1969–2004[‡]



*The group, or category, called "Hispanic" may be included in other categories like White, Black, American Indian/Alaska Native (AI/AN), and Asian/Pacific Islander (Asian/PI).

[†]Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.

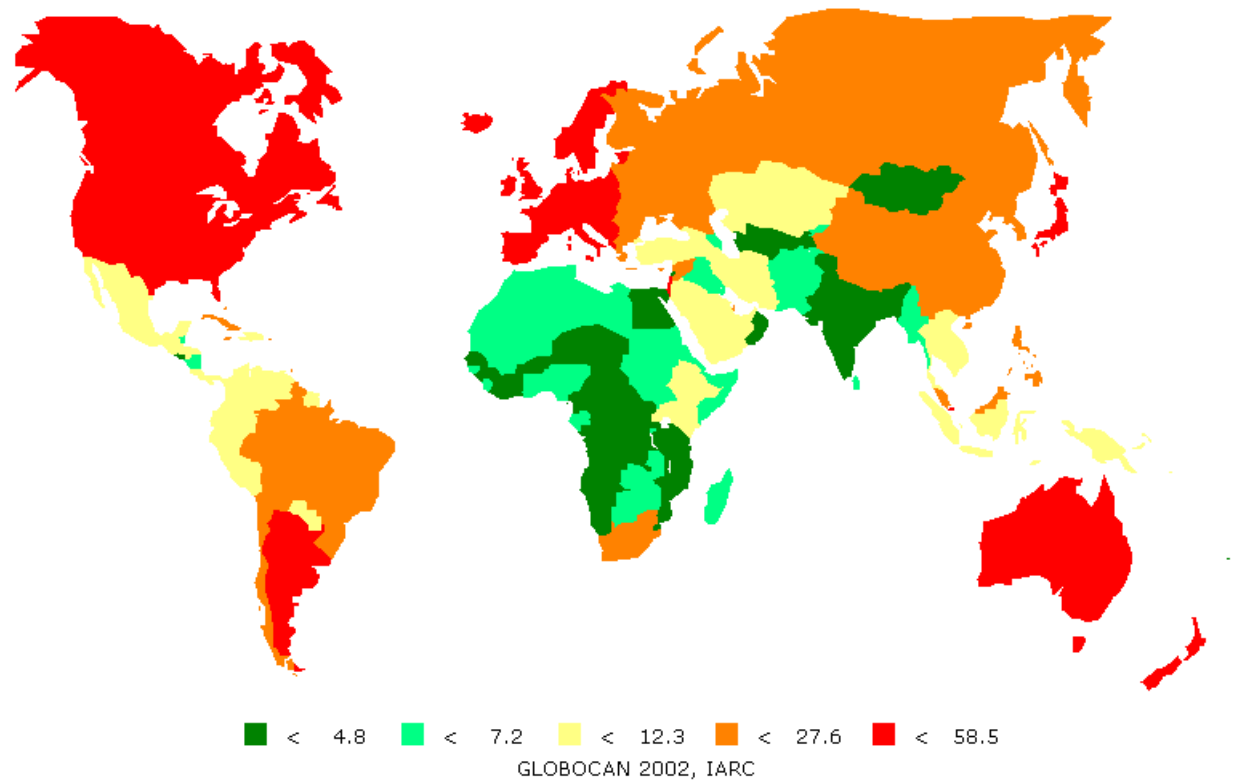
[‡]Source: National Centre for Health Statistics (NCHS)

Epidemiology

- Gender
- Age
- Race & Ethnicity
- Geography

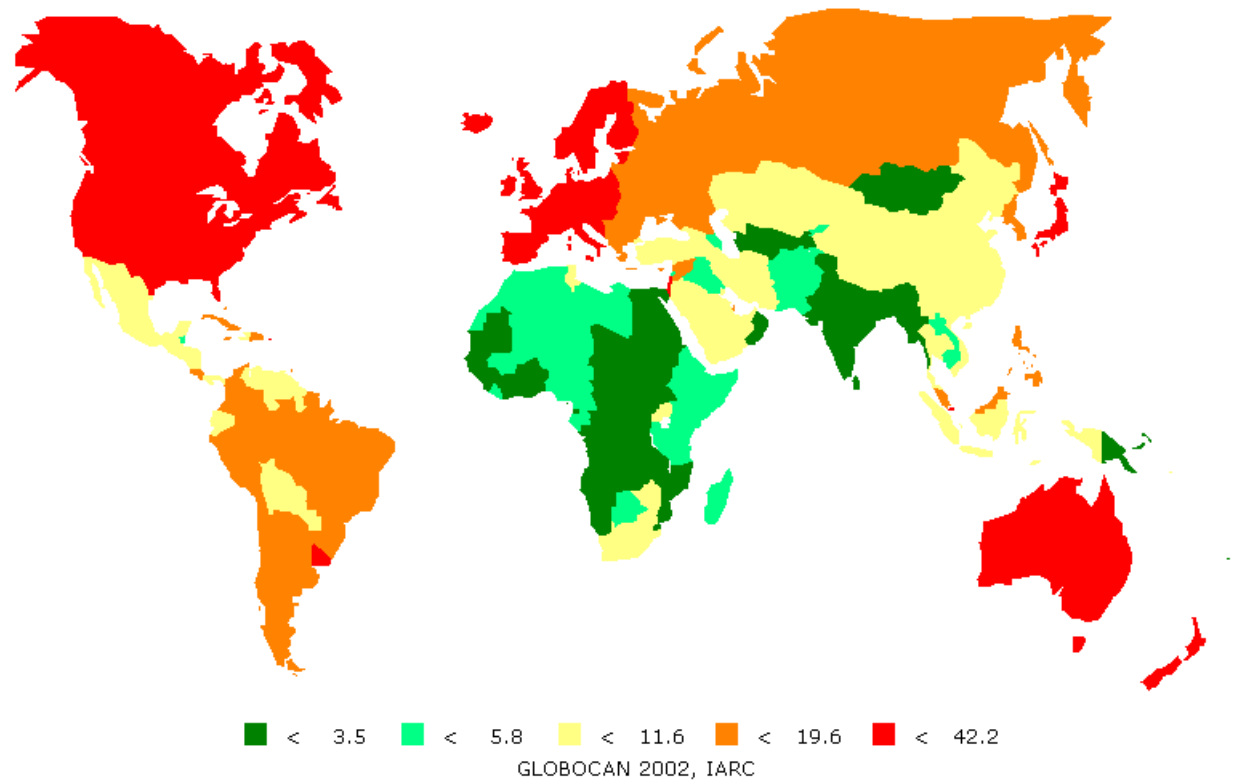
Epidemiology Geography

Colon and rectum, Males
Age-Standardized incidence rate per 100,000



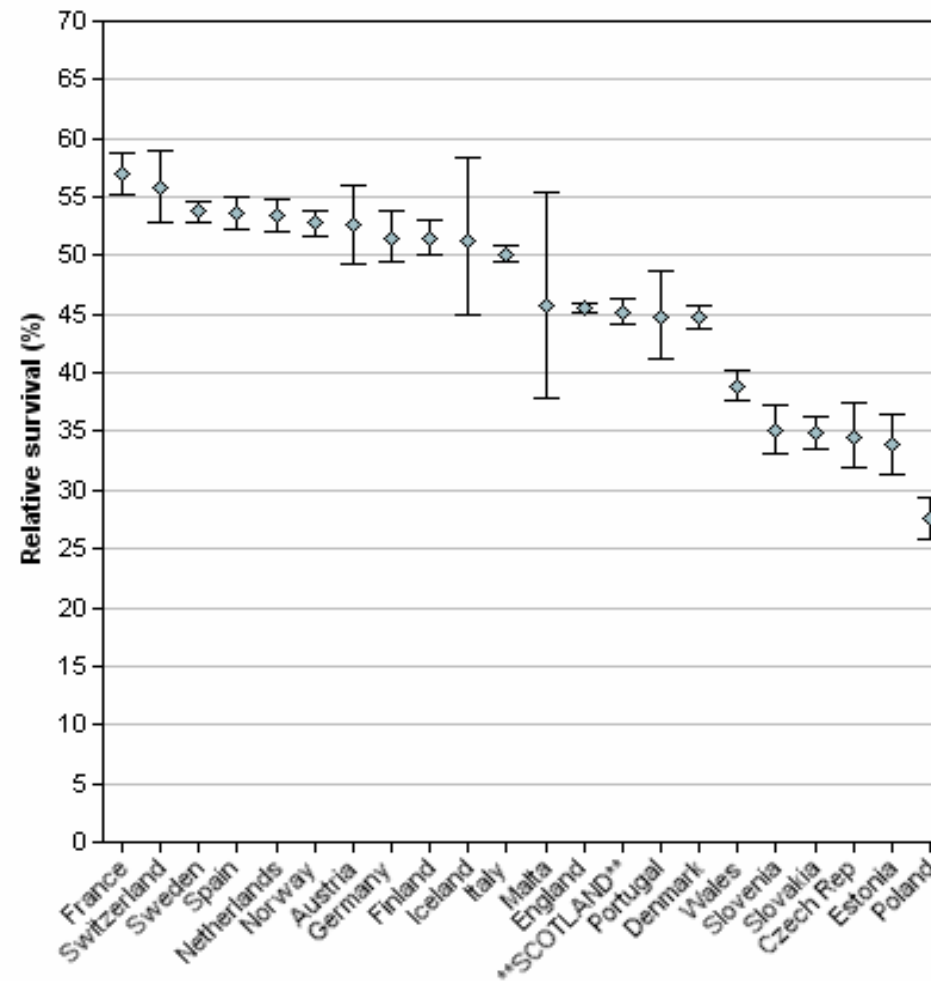
Epidemiology Goegraphy

Colon and rectum, Females
Age-Standardized incidence rate per 100,000



Epidemiology

Morbidity & Mortality



Relative survival figures are age-standardised and are for both sexes combined
Source: EURO CARE-3 database

Epidemiology

Morbidity & Mortality

STAGE	TNM	GROUP	GROUP	DUKE'S	Prognosis
Stage I	T1	N0	M0	Duke's A	5 year survival >90%
	T2	N0	M0		
Stage II	T3	N0	M0	Duke's B	5 year survival 70-85%
	T4	N0	M0		5 year survival 55-65%
Stage III	any T	N1	M0	Duke's C	5 year survival 45-55%
	any T	N2, N3	M0		5 year survival 20-30%
Stage IV	any T	any N	M1 (distant)	Duke's D	5 year survival < 5%

Relative survival figures are age-standardised and are for both sexes combined

Source: EUROCARE-3 database

Epidemiology

The Local Picture

Males

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Under 5	0	0	0	0	0	0	0	0	0	0
05 - 09	0	0	0	0	0	0	0	0	0	0
10 - 14	0	0	0	0	0	0	0	0	0	0
15 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	1	0	0	0	0	0	0	1
25 - 29	1	1	0	0	0	0	0	0	1	0
30 - 34	1	2	0	0	0	0	0	0	1	0
35 - 39	0	1	1	0	0	3	0	0	1	0
40 - 44	0	0	1	2	0	4	1	3	2	0
45 - 49	5	1	5	6	3	6	3	3	4	3
50 - 54	5	5	4	4	5	3	10	8	7	10
55 - 59	11	11	5	5	11	10	6	10	10	20
60 - 64	11	5	11	7	9	8	12	8	17	20
65 - 69	8	8	8	14	11	16	15	11	17	7
70 - 74	13	0	11	14	10	13	12	22	12	9
75 - 79	8	15	5	11	9	10	9	13	16	19
80 - 85	7	2	7	4	8	6	9	5	9	13
85+	5	3	4	4	2	7	5	4	6	5
All Ages	75	64	63	71	68	86	82	87	103	107

Number of new cases by age and year of cancer registration

Cancer of the colorectum (ICD-10 C18-C20); Maltese Islands: trends in incidence 1996-2005

Malta National Cancer Registry, Department of Health Information, Malta

Data extracted: April 2007

Epidemiology

The Local Picture

Females

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Under 5	0	0	0	0	0	0	0	0	0	0
05 - 09	0	0	0	0	0	0	0	0	0	0
10 - 14	0	0	0	0	0	0	0	0	0	0
15 - 19	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	1	0	0
25 - 29	0	0	0	0	0	0	1	0	1	0
30 - 34	0	0	0	0	0	0	1	1	1	0
35 - 39	0	1	0	3	2	1	0	0	1	0
40 - 44	0	3	2	1	2	2	2	3	2	3
45 - 49	6	6	8	4	6	3	4	4	2	4
50 - 54	5	5	4	11	7	7	3	9	5	5
55 - 59	3	8	5	6	9	10	4	10	15	13
60 - 64	10	8	9	9	6	10	9	3	10	8
65 - 69	4	9	9	8	15	10	17	10	12	8
70 - 74	8	11	10	12	9	14	10	12	16	6
75 - 79	4	12	7	9	21	8	16	7	15	12
80 - 85	6	9	9	8	5	10	8	3	4	7
85+	3	4	1	5	7	2	4	3	7	5
All Ages	49	76	64	76	89	77	79	66	90	71

Number of new cases by age and year of cancer registration

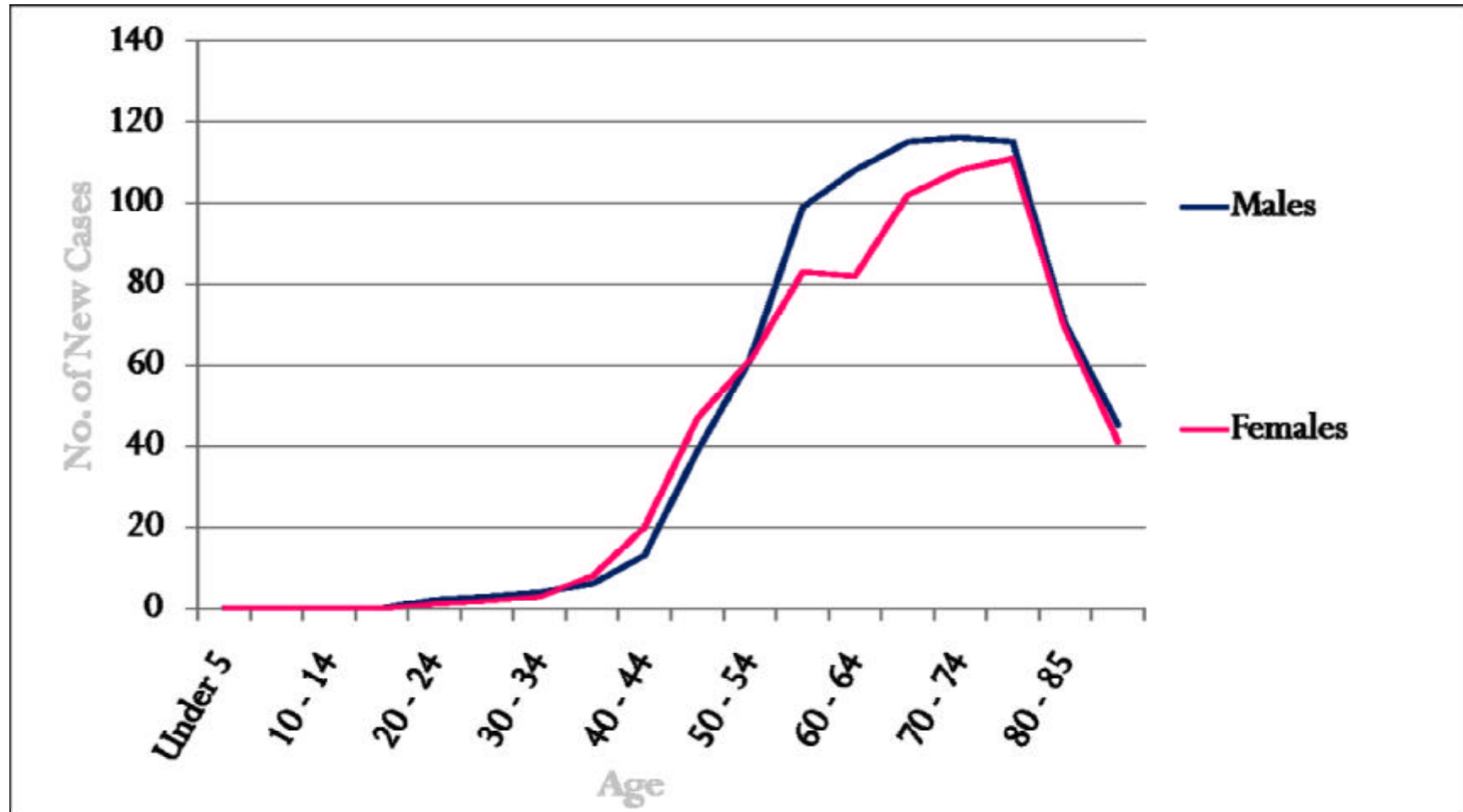
Cancer of the colorectum (ICD-10 C18-C20); Maltese Islands: trends in incidence 1996-2005

Malta National Cancer Registry, Department of Health Information, Malta

Data extracted: April 2007

Epidemiology

The Local Picture



Epidemiology

The Local Picture

Males

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Under 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05 - 09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 - 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 - 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 - 24	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07
25 - 29	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
30 - 34	0.07	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
35 - 39	0.00	0.07	0.07	0.00	0.00	0.22	0.00	0.00	0.08	0.00
40 - 44	0.00	0.00	0.07	0.14	0.00	0.27	0.07	0.20	0.14	0.00
45 - 49	0.33	0.07	0.35	0.42	0.21	0.41	0.20	0.20	0.26	0.20
50 - 54	0.44	0.39	0.28	0.27	0.33	0.20	0.67	0.54	0.48	0.69
55 - 59	1.30	1.37	0.63	0.58	1.12	0.88	0.46	0.70	0.67	1.33
60 - 64	1.43	0.63	1.36	0.85	1.07	0.96	1.50	1.00	1.94	2.03
65 - 69	1.28	1.26	1.24	2.12	1.60	2.22	2.00	1.43	2.13	0.87
70 - 74	2.44	1.85	2.03	2.61	1.85	2.38	2.16	3.85	2.04	1.48
75 - 79	2.34	4.02	1.29	2.77	2.20	2.39	2.13	3.05	3.75	4.45
80 - 85	3.86	1.09	3.86	2.13	3.77	2.49	3.54	1.94	3.40	4.80
85+	4.26	2.50	3.27	3.21	1.57	5.35	3.72	2.87	3.99	3.02
All Ages	17.84	13.51	14.52	15.08	13.73	17.77	16.45	15.77	19.03	18.92

Age-standard Incidence Rates by age and year of cancer registration

Cancer of the colorectum (ICD-10 C18-C20); Maltese Islands: trends in incidence 1996-2005

Malta National Cancer Registry, Department of Health Information, Malta

Data extracted: April 2007

Epidemiology

The Local Picture

Females

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Under 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05 - 09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 - 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 - 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 - 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
25 - 29	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
30 - 34	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.00
35 - 39	0.00	0.07	0.00	0.22	0.15	0.08	0.00	0.00	0.08	0.00
40 - 44	0.00	0.22	0.14	0.07	0.14	0.13	0.13	0.20	0.14	0.22
45 - 49	0.40	0.41	0.56	0.29	0.43	0.21	0.28	0.27	0.13	0.26
50 - 54	0.43	0.38	0.27	0.73	0.46	0.46	0.20	0.61	0.34	0.35
55 - 59	0.32	0.90	0.57	0.64	0.86	0.84	0.30	0.67	0.97	0.84
60 - 64	1.08	0.86	0.96	0.96	0.63	1.06	1.00	0.34	1.04	0.75
65 - 69	0.51	1.11	1.08	0.94	1.72	1.12	1.86	1.08	1.28	0.85
70 - 74	1.16	1.58	1.42	1.71	1.26	1.89	1.31	1.53	1.98	0.73
75 - 79	0.88	2.40	1.33	1.63	3.66	1.36	2.67	1.15	2.46	1.94
80 - 85	2.07	3.07	3.09	2.73	1.59	2.86	2.10	0.75	0.95	1.62
85+	1.34	1.65	0.40	1.97	2.70	0.76	1.51	1.11	2.49	1.66
All Ages	8.19	12.64	9.83	11.89	13.58	10.76	11.52	7.86	11.96	9.22

Age-standard Incidence Rates by age and year of cancer registration

Cancer of the colorectum (ICD-10 C18-C20); Maltese Islands: trends in incidence 1996-2005

Malta National Cancer Registry, Department of Health Information, Malta

Data extracted: April 2007

Thank You

Malta Institute for Medical Education

