

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. List of ICD 9 and ICD 10 Codes for Gastrointestinal Bleedings

ICD-10 Codes	Description	Type
I850	Esophageal varices	UGIB
K226	Gastro-esophageal laceration syndrome (Mallory–Weiss syndrome)	UGIB
K250	Acute gastric ulcer with hemorrhage (peptic ulcer disease (pud), peptic ulcer or stomach ulcer)	UGIB
K252	Acute gastric ulcer with both hemorrhage and perforation (pud)	UGIB
K254	Chronic or unspecified gastric ulcer with hemorrhage (pud)	UGIB
K256	Chronic or unspecified gastric ulcer with both hemorrhage and perforation (pud)	UGIB
K260	Acute duodenal ulcer with hemorrhage (pud)	UGIB
K262	Acute duodenal ulcer with both hemorrhage and perforation (pud)	UGIB
K264	Chronic or unspecified duodenal ulcer with hemorrhage (pud)	UGIB
K266	Chronic or unspecified duodenal ulcer with both hemorrhage and perforation (pud)	UGIB
K270	Acute peptic ulcer, site unspecified, with hemorrhage (pud)	UGIB
K272	Acute peptic ulcer, site unspecified, with both hemorrhage and perforation (pud)	UGIB
K274	Chronic or unspecified peptic ulcer, site unspecified, with hemorrhage (pud)	UGIB
K276	Chronic or unspecified peptic ulcer, site unspecified, with both hemorrhage and perforation (pud)	UGIB
K290	Acute bleeding gastric ulcer	UGIB
K661	Hemoperitoneum	UGIB
K920	Hematemesis	UGIB
K22.8	Other specified diseases of esophagus (Includes: Bleeding in the esophagus UNS), more precisely defined esophageal bleeding	UGIB
K280	Acute gastrojejunal ulcer with hemorrhage	LGIB
K282	Acute gastrojejunal ulcer with both hemorrhage and perforation	LGIB
K284	Chronic or unspecified gastrojejunal ulcer with hemorrhage	LGIB
K286	Chronic or unspecified gastrojejunal ulcer with both hemorrhage and perforation	LGIB
K5280 #	Antibiotic-associated [hemorrhagic] colitis	LGIB
K625	Hemorrhage of anus and rectum	LGIB
K921	Melena	LGIB
K922	Gastrointestinal hemorrhage, unspecified (Stomach bleeding UNS / Intestinal bleeding UNS)	Unspecified GIB
ICD-9 Codes	Description	Type
4560A	Esophageal varices with bleeding	UGIB
5307A	Mallory–Weiss syndrome	UGIB
531*B	Ulcer with bleeding	UGIB
532*B	Ulcer with bleeding	UGIB
5780A	Hematemesis	UGIB
5781A	Melena	LGIB
5621C	Diverticulitis coli with hemorrhage	LGIB
5781B	Hemorrhage ex ano	Unspecified GIB

UGIB – Upper Gastrointestinal Bleeding; LGIB – Lower Gastrointestinal Bleeding; GIB - Gastrointestinal Bleeding; pud – Peptic Ulcer Disease

eTable 2. Baseline Characteristics of the Study Participants by Type of Gastrointestinal Bleeding During Follow-up

Characteristic	No. (%)				
	No GIB (n = 37 973)	GIB All (n = 1081)	Upper (n = 494) ^a	Lower (n = 645) ^a	Unspecified (n = 135) ^a
Age, y					
Mean (SD)	47.2 (13.2)	53.4 (11.9)	52.8 (12.1)	54.0 (11.7)	54.9 (11.0)
Median (IQR)	47.0 (21.9)	55.4 (16.2)	55.4 (16.8)	55.8 (15.7)	56.7 (14.4)
Men	18 026 (47.5)	648 (59.9)	321 (65.0)	371 (57.5)	83 (61.5)
Enrollment in FINRISK survey					
Q1 1987	5635 (14.8)	282 (26.1)	134 (27.1)	168 (26.0)	33 (24.4)
Q1 1992	5193 (13.7)	229 (21.2)	108 (21.9)	141 (21.9)	20 (14.8)
Q1 1997	7867 (20.2)	296 (27.4)	142 (28.7)	170 (26.4)	44 (32.6)
Q1 2002	8088 (21.3)	175 (16.2)	67 (13.6)	108 (16.7)	26 (19.3)
Q1 2007	5850 (15.4)	73 (6.8)	29 (5.9)	45 (7.0)	8 (5.9)
Q1 2012	5520 (14.5)	26 (2.4)	14 (2.8)	13 (2.0)	4 (3.0)
Marital status					
Married, cohabiting, or registered partnership	27 891 (73.4)	791 (73.2)	350 (70.9)	469 (72.7)	105 (77.8)
Single, divorced, or widowed	9987 (26.3)	284 (26.3)	141 (28.5)	172 (26.7)	29 (21.5)
Unknown	95 (0.3)	6 (0.6)	3 (0.6)	4 (0.6)	1 (0.7)
Educational tertiles ^b					
Low (1)	11 642 (30.7)	340 (31.5)	156 (31.6)	202 (31.3)	40 (29.6)
Moderate (2)	12 267 (32.3)	339 (31.4)	163 (33.0)	199 (30.9)	44 (32.6)
High (3)	13 274 (35.0)	363 (33.6)	158 (32.0)	221 (34.3)	47 (34.8)
Unknown	790 (2.1)	39 (3.6)	17 (3.4)	23 (3.6)	4 (3.0)
Current occupation					
Nonmanual (office/studying)	18 410 (48.5)	326 (30.2)	142 (28.7)	194 (30.1)	41 (30.4)
Manual (factory/construction)	5203 (13.7)	154 (14.2)	76 (15.4)	87 (13.5)	15 (11.1)
Farming/forestry	2180 (5.7)	62 (5.7)	25 (5.1)	38 (5.9)	10 (7.4)
Family/housewife	1297 (3.4)	14 (1.3)	6 (1.2)	9 (1.4)	2 (1.5)
Pensioner	8138 (21.4)	418 (38.7)	191 (38.7)	259 (40.2)	54 (40.0)
Unemployed	2229 (5.9)	88 (8.1)	44 (8.9)	50 (7.8)	9 (6.7)
Unknown	516 (1.4)	19 (1.8)	10 (2.0)	8 (1.2)	4 (3.0)
Geographical area ^c					
West Finland	14 496 (38.2)	432 (40.0)	194 (39.3)	254 (39.4)	61 (45.2)

East Finland	23 477 (61.8)	649 (60.0)	300 (60.7)	391 (60.6)	74 (54.8)
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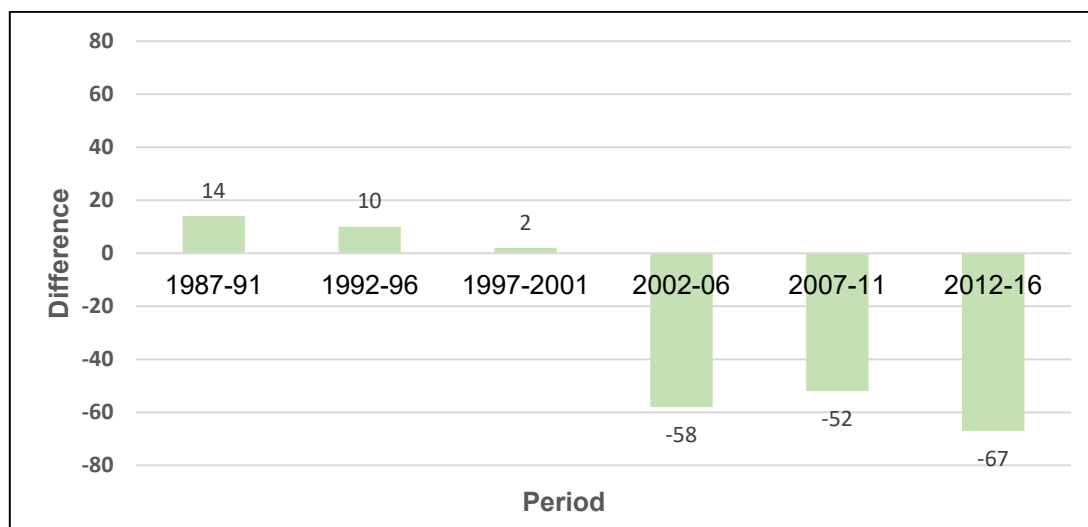
Abbreviations: GIB, gastrointestinal bleeding; IQR, interquartile range.

^aA participant can have more than 1 type of GIB.

^bEducational tertiles were calculated according to years of education and were specific to the birth cohorts.

^cWest Finland includes Turku and Loimaa as well as Helsinki and Vantaa. East Finland includes North Karelia, North Savo, Oulu, and Lapland.

eFigure. Absolute Difference Between the Number of Upper and Lower Gastrointestinal Bleeding Events for Five-Year Period Each



eTable 3. Mortality Rates and 28-Day Case-Fatality Due to Gastrointestinal Bleedings Between 1987 and 2016

Cause-specific mortality rates per 1000 person-years									
	Upper Gastrointestinal Bleedings			Lower Gastrointestinal Bleedings			Unspecified Gastrointestinal Bleedings		
	Fatal UGIB	Person years	Mortality rate in UGIB (95% CI)	Fatal LGIB	Person years	Mortality rate in LGIB (95% CI)	Fatal uns. GIB	Person years	Mortality rate in unspecified GIB (95% CI)
Men									
Overall crude rate	30	292043.2	0.10 (0.07 – 0.15)	2	292043.2	0.007 (0.001–0.02)	15	292043.2	0.05 (0.03 – 0.08)
Age std. rate			0.11 (0.07 – 0.16)			0.006 (0.001–0.02)			0.06 (0.03 – 0.11)
Women									
Overall crude rate	8	335472.6	0.02 (0.01 – 0.05)	2	335472.6	0.006 (0.001–0.02)	0	335472.6	–
Age std. rate			0.03 (0.01 – 0.06)			0.014 (0.000–0.06)		–	–
Total - Crude rate	38	627515.8	0.06 (0.04 – 0.08)	4	627515.8	0.006 (0.002–0.02)	15	627515.8	0.024 (0.01 – 0.04)
Total – age std.			0.07 (0.04 – 0.09)			0.01 (0.001 – 0.03)			0.03 (0.02 – 0.05)
Case Fatality within 28 Days									
	Upper Gastrointestinal Bleedings			Lower Gastrointestinal Bleedings			Unspecified Gastrointestinal Bleedings		
	Fatal UGIB	Total UGIB	Case-Fatality of UGIB (95% CI)	Fatal LGIBs	Total LGIB	Case-Fatality of LGIB (95% CI)	Fatal uns. GIB	Total uns. GIB	Case-Fatality of unspecified GIB (95% CI)
Men									
Overall crude rate	27	321	8.4% (5.8 – 11.9)	1	371	0.3% (0.05 – 1.5)	12	83	14.5 (8.5 – 23.6)
Age std. rate			8.8% (5.6 – 13.1)			0.3% (0.004 – 1.6)			16.2% (6.7 – 31.0)
Women									
Overall crude rate	7	173	4.0% (2.0 – 8.1)	2	274	0.7% (0.2 – 2.6)	0	52	-
Age std. rate			3.5% (1.2 – 7.5)			0.6% (0.05 – 2.1)			-
Total - Crude rate	34	494	6.9% (5.0 – 9.5)	3	645	0.5% (0.2 – 1.4)	12	135	8.9% (5.6 – 14.9)
Total – age std.			7.0% (4.7 – 10.1)			0.4% (0.1 – 1.3)			8.8% (3.9 – 16.2)

UGIB – Upper Gastrointestinal Bleedings; LGIB – Lower Gastrointestinal Bleedings; GIB – Gastrointestinal Bleedings; uns. – unspecified; Std. – Standardized