

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. ICD Diverticulitis Codes

diverticulitis_ICD	type	type_char	note
K57	1	uncomplicated	
K570	2	other (small bowel)	exclude
K5700	2	other (small bowel)	exclude
K5701	2	other (small bowel)	exclude
K5702	2	other (small bowel)	exclude
K5703	2	other (small bowel)	exclude
K571	2	other (small bowel)	exclude
K5710	2	other (small bowel)	exclude
K5711	2	other (small bowel)	exclude
K5712	2	other (small bowel)	exclude
K5713	2	other (small bowel)	exclude
K572	3	complicated	
K5720	3	complicated	
K5721	3	complicated	
K5722	3	complicated	
K5723	3	complicated	
K573	1	uncomplicated	
K5730	1	uncomplicated	
K5731	1	uncomplicated	
K5732	1	uncomplicated	
K5733	1	uncomplicated	
K574	3	complicated	
K5740	3	complicated	
K5741	3	complicated	
K5742	3	complicated	
K5743	3	complicated	
K575	1	uncomplicated	
K5750	1	uncomplicated	
K5751	1	uncomplicated	
K5752	1	uncomplicated	
K5753	1	uncomplicated	
K578	3	complicated	
K5780	3	complicated	
K5781	3	complicated	
K5782	3	complicated	
K5783	3	complicated	
K579	1	uncomplicated	
K5790	1	uncomplicated	
K5791	1	uncomplicated	
K5792	1	uncomplicated	
K5793	1	uncomplicated	

eTable 2. Additional ICD Diverticulitis Codes for Combination of Complication as Main Diagnosis and Diverticulitis Code (According eTable 1)

main diagnosis_text	main_diagnosis_ICD	1st_secondary_diagnosis_ICD	OTHER_CONDITION_1	type	type_char	note_1
Intestinal obstruction	K56	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Paralytic ileus	K560	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Other impaction of intestine	K564	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Intestinal adhesions [bands] with obstruction	K565	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Other and unspecified intestinal obstruction	K566	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Ileus, unspecified	K567	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	obstruction
Abscess of intestine	K63	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Abscess of intestine	K630	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Perforation of intestine	K631	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Fistula of intestine	K632	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Other specified diseases of intestine	K638	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Disease of intestine, unspecified	K639	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Fistula of vagina to large intestine	N823	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula

Other female intestinal-genital tract fistulae	N824	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abscess/fistula
Peritonitis	K65	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	Peritonitis
Acute peritonitis	K650	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	Peritonitis
Other peritonitis	K658	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	Peritonitis
Peritonitis, unspecified	K659	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	Peritonitis
Intra-abdominal and pelvic swelling, mass and lump	R190	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	abdominal mass
Haemorrhage of anus and rectum	K625	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	hemorrhage
Melaena	K921	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	hemorrhage
Gastrointestinal haemorrhage, unspecified	K922	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	hemorrhage
Hypovolemic Shock	R57.1	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	shock
Septic shock	R572	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	shock
Other shock	R578	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	shock
Shock, unspecified	R579	any diverticulitis code according file "jDiverticulitis_types.xlsx"	any diverticulitis code according file "jDiverticulitis_types.xlsx"	3	complicated	shock

eTable 3. Hospital Characteristics and Expertise of All Hospitals With Diverticulitis Cases, by Country

Hospitals are defined as medical centers if they handle on average more than 7500 cases a year, and they are classified at high expertise for diverticulitis if they handle on average more than 100 diverticulitis cases per year.

Baseline characteristics	Switzerland (n=163)	Scotland (n=64)	Both (n=227)
Hospital class			
Medical center	77 (47.2%)	32 (50%)	109 (48.0%)
regional	86 (52.8%)	31 (48.4%)	117 (51.5%)
Missing	NA	1 (1.6%)	1 (0.44%)
Hospital expertise			
high	60 (36.8%)	24 (37.5%)	84 (37%)
low	103 (63.2%)	39 (60.9%)	142 (62.6%)
Missing	NA	1 (1.6%)	1 (0.4%)

eTable 4. Annual Unadjusted Incidence Rates of Complicated and Uncomplicated Diverticulitis From 2005 to 2015 in Switzerland and Scotland

Year	Incidence of <i>uncomplicated</i> diverticulitis/10`000 inhabitants		Incidence of <i>complicated</i> diverticulitis/10`000 inhabitants	
	Switzerland	Scotland	Switzerland	Scotland
2005	6.069	4.094	2.850	1.436
2006	5.852	3.698	2.842	1.473
2007	5.876	3.720	3.021	1.499
2008	5.802	3.548	3.002	1.591
2009	5.913	3.280	2.859	1.468
2010	6.118	3.411	2.683	1.560
2011	6.327	3.625	2.692	1.483
2012	6.298	3.627	2.804	1.383
2013	6.166	3.686	2.648	1.445
2014	5.931	3.605	2.666	1.477
2015	5.842	3.583	2.776	1.403
Mean (over 11 year period)	6.018	3.625	2.804	1.474

eTable 5. Readmissions in Switzerland and Scotland After an Initial Episode of Successful Conservative Management of Diverticulitis Stratified by a later Event of Emergency Surgery or Death

Readmissions	Patients (%) without emergency surgery or death		Patients with emergency surgery or death at any readmission	
	Switzerland	Scotland	Switzerland	Scotland
0	8779 (67%)	3302 (68%)	0	0
1	3499 (27%)	1054 (22%)	575 (82%)	175 (69%)
2	698 (5%)	331 (7%)	96 (14%)	53 (21%)
3	161 (1%)	98 (2%)	16 (2%)	16 (6%)
4	29 (<1%)	47 (1%)	8 (1%)	7 (3%)
>4	12 (<1%)	42 (1%)	3 (<1%)	4 (2%)
Median Number of Readmissions (Range)	0 (0-6)	0 (0-15)	1 (1-6)	1 (1-7)

eTable 6. Marginal Model for Problematic Recurrence Leading to Death, in Patients After a First Conservatively Managed Episode of Complicated Diverticulitis in the Swiss and Scottish Health Care System

term	Estimate	95% CI for estimate	OR	95% CI of the OR
(Intercept)	-5.07	-5.44;-4.69	NA	NA
hcs (Switzerland vs Scotland)	-0.43	-0.80; -0.05	0.65	0.45; 0.95
sex (male vs female)	-0.23	-0.55; 0.10	0.80	0.58; 1.10
Hospital admission volume (<7500 admissions / year vs more)	0.24	-0.34; 0.82	1.28	0.72; 2.28
Hospital diverticulitis caseload (<100 cases / year vs more)	0.30	-0.17; 0.77	1.35	0.85; 2.16
Deprivation at baseline (low vs high)	-0.13	-0.53; 0.26	0.88	0.59; 1.30
Median age at baseline (for 5 year age category)	0.37	0.31; 0.43	1.45	1.37; 1.54
Charleston Comorbidity Index at baseline	0.15	0.10; 0.20	1.17	1.11; 1.23

hcs health care system, vs versus CI Confidence Interval OR Odds ratio NA not applicable

eTable 7a-d

a) Multiple logistic regression for problematic recurrence with Scotland instead of Switzerland as reference level, and including interaction terms.

Effects: Full (multivariable) model for problematic recurrence, including interaction terms, with odds ratios and 95% confidence intervals			
term	OR	OR_low	OR_high
Switzerland vs Scotland (large hospitals)	0.97	0.83	1.13
Switzerland vs Scotland (small hospitals)	1.42	0.63	3.59
Hospital size, small vs large (Scotland)	0.86	0.40	1.63
Hospital size, small vs large (Switzerland)	1.26	0.30	5.18
Male vs Female	0.87	0.76	0.99
Low expertise vs High expertise	1.06	0.85	1.30
Deprivation yes vs no	0.97	0.84	1.13
Baseline age increase by 5 year (for cci=0)	1.00	0.98	1.02
Per CCI unit increase (for the median age band)	0.91	0.75	1.25

b) Model accounting for hospital clustering, with Scotland as reference level, and including interaction terms.

Effects: Marginal model for problematic recurrence (including death), estimated via GEE, accounting for hospital clustering, and including interaction terms, reporting the odds ratios with their 95% confidence intervals			
term	OR	OR_low	OR_high
Switzerland vs Scotland (large hospitals)	0.97	0.80	1.17
Switzerland vs Scotland (small hospitals)	1.42	0.45	4.43
Hospital size, small versus large (Scotland)	0.86	0.33	2.21
Hospital size, small versus large (Switzerland)	1.26	0.18	8.38
Male vs Female	0.87	0.75	1.01
Low expertise vs High expertise	1.06	0.79	1.41
Deprivation yes vs no	0.97	0.82	1.15
Baseline age increase by 5 year (for cci=0)	1.00	0.97	1.03
Per CCI unit increase (for the median age band)	0.91	0.76	1.24

c) Multiple logistic regression and GEE for recurrence with death, using Scotland as reference level, and including interaction terms.

Effects: Full (multivariable) model for recurrence with death, with interaction terms, reporting odds ratios and 95% confidence intervals			
term	OR	OR_low	OR_high
Switzerland vs Scotland (large hospitals)	0.65	0.47	0.92
Switzerland vs Scotland (small hospitals)	0.77	0.20	3.92
Hospital size, small versus large (Scotland)	1.11	0.32	2.91
Hospital size, small versus large (Switzerland)	1.32	0.13	12.40
Male vs Female	0.82	0.59	1.13
Low expertise vs High expertise	1.34	0.83	2.09
Deprivation yes vs no	0.87	0.59	1.24
Baseline age increase by 5 year (for cci=0)	1.51	1.39	1.63
Per CCI unit increase (for the median age band)	0.78	0.55	1.10

d) Multiple logistic regression and GEE for recurrence with death, using Scotland as reference level, and including interaction terms accounting for hospital clustering.

Effects: Marginal model for problematic recurrence with death, estimated via GEE, accounting for hospital clustering, and including interaction terms, reporting the odds ratios with their 95% confidence intervals			
term	OR	OR_low	OR_high
Switzerland vs Scotland (large hospitals)	0.65	0.44	0.97
Switzerland vs Scotland (small hospitals)	0.77	0.17	3.50
Hospital size, small versus large (Scotland)	1.11	0.40	3.06
Hospital size, small versus large (Switzerland)	1.32	0.16	11.05
Male vs Female	0.82	0.59	1.13
Low expertise vs High expertise	1.34	0.84	2.14
Deprivation yes vs no	0.87	0.58	1.29
Baseline age increase by 5 year (for cci=0)	1.51	1.41	1.61
Per CCI unit increase (for the median age band)	0.97	0.66	1.09