

SUPPLEMENT

SHIFTING CARE FROM INPATIENT TOWARDS DAY-CARE AND AMBULATORY CARE: IMPACT ON READMISSION RATES & POST-DISCHARGE MORTALITY



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Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report.

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- Finally, this report has been approved by common assent by the Executive Board.
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■ APPENDICES

1 SUPPLEMENT TO CHAPTER 1

Table 1 – List of excluded DRGs (v31)

DRG	Label
020	Craniotomy For Trauma
021	Craniotomy Except For Trauma
022	Ventricular Shunt Procedures
024	Extracranial Vascular Procedures
160	Major Cardiothoracic Repair Of Heart Anomaly
161	Cardiac Defibrillator and Heart Assist Implant
162	Cardiac Valve Procedures W Cardiac Catheterization
163	Cardiac Valve Procedures W/O Cardiac Catheterization
165	Coronary Bypass with Cardiac Cath Or Percutaneous Cardiac Procedure
166	Coronary Bypass without Cardiac Cath Or Percutaneous Cardiac Procedure
170	Permanent Cardiac Pacemaker Implant W Ami, Heart Failure Or Shock
171	Perm Cardiac Pacemaker Implant W/O Ami, Heart Failure Or Shock
262	Cholecystectomy Except Laparoscopic
301	Hip Joint Replacement
302	Knee Joint Replacement
303	Dorsal and Lumbar Fusion Proc For Curvature Of Back
304	Dorsal and Lumbar Fusion Proc Except For Curvature Of Back
305	Amputation Of Lower Limb, Except Toes
308	Hip and Femur Procedures For Trauma, Except Joint Replacement
440	Kidney Transplant
442	Kidney and Urinary Tract Procedures For Malignancy
480	Major Male Pelvic Procedures
510	Pelvic Evisceration, Radical Hysterectomy and Other Radical Gyn Procedures
511	Uterine and Adnexa Procedures For Ovarian and Adnexal Malignancy
540	Cesarean Delivery
542	Vaginal Delivery W Complicating Proc Except Sterilization &/Or D
650	Splenectomy

Table 2 – List of excluded beds

Index	Description
<i>A</i>	Acute psychiatric beds
<i>K</i>	Child/adolescent psychiatric beds
<i>T</i>	Chronic psychiatric beds
<i>SP</i>	Specialized rehabilitation beds for: - cardio-respiratory conditions (S1) - locomotor disorders (S2) - neurological disorders (S3) - palliative care (S4) - functional rehabilitation for complex chronic conditions (S5) - psychogeriatric disorders (S6)


Table 3 – Descriptives of main population and admission characteristics in subsample of inpatient stays

	Overall	Period 1	Year 2008	Year 2014	Period 2	Year 2016	Year 2022
All admissions	4 451 988 (100.0%)	2 307 024 (100.0%)	324 687 (100.0%)	327 638 (100.0%)	2 144 964 (100.0%)	327 660 (100.0%)	298 025 (100.0%)
Sex							
Male	2 058 898 (46.2%)	1 054 970 (45.7%)	147 641 (45.5%)	150 026 (45.8%)	1 003 928 (46.8%)	151 611 (46.3%)	141 574 (47.5%)
Female	2 393 090 (53.8%)	1 252 054 (54.3%)	177 046 (54.5%)	177 612 (54.2%)	1 141 036 (53.2%)	176 049 (53.7%)	156 451 (52.5%)
Age							
Age group 0-15	129 543 (2.9%)	72 233 (3.1%)	11 117 (3.4%)	9 279 (2.8%)	57 310 (2.7%)	9 163 (2.8%)	7 685 (2.6%)
Age group 16-45	1 193 792 (26.8%)	654 600 (28.4%)	96 358 (29.7%)	88 916 (27.1%)	539 192 (25.1%)	85 231 (26.0%)	72 800 (24.4%)
Age group 46-60	1 215 721 (27.3%)	642 198 (27.8%)	89 240 (27.5%)	91 728 (28.0%)	573 523 (26.7%)	90 806 (27.7%)	74 705 (25.1%)
Age group 61-75	1 277 203 (28.7%)	619 088 (26.8%)	84 653 (26.1%)	91 332 (27.9%)	658 115 (30.7%)	94 917 (29.0%)	95 604 (32.1%)
Age group 76-85	525 174 (11.8%)	268 657 (11.6%)	37 191 (11.5%)	38 588 (11.8%)	256 517 (12.0%)	38 977 (11.9%)	38 237 (12.8%)
Age group over 85	110 555 (2.5%)	50 248 (2.2%)	6 128 (1.9%)	7 795 (2.4%)	60 307 (2.8%)	8 566 (2.6%)	8 994 (3.0%)
Elixhauser							
No comorbidities	2 423 807 (54.4%)	1 352 937 (58.6%)	197 026 (60.7%)	179 968 (54.9%)	1 070 870 (49.9%)	174 595 (53.3%)	141 352 (47.4%)
1 comorbidity	1 013 847 (22.8%)	503 363 (21.8%)	69 683 (21.5%)	74 606 (22.8%)	510 484 (23.8%)	75 911 (23.2%)	72 579 (24.4%)
2 comorbidities	560 072 (12.6%)	261 477 (11.3%)	34 935 (10.8%)	40 595 (12.4%)	298 595 (13.9%)	42 211 (12.9%)	43 744 (14.7%)
3 or more comorbidities	454 262 (10.2%)	189 247 (8.2%)	23 043 (7.1%)	32 469 (9.9%)	265 015 (12.4%)	34 943 (10.7%)	40 350 (13.5%)
Admission source							
Home	4 409 159 (99.0%)	2 281 511 (98.9%)	321 430 (99.0%)	324 707 (99.1%)	2 127 648 (99.2%)	325 034 (99.2%)	292 579 (98.2%)
Nursing home	6 229 (0.1%)	3 899 (0.2%)	587 (0.2%)	503 (0.2%)	2 330 (0.1%)	397 (0.1%)	338 (0.1%)
Other hospital	16 674 (0.4%)	11 021 (0.5%)	1 791 (0.6%)	1 329 (0.4%)	5 653 (0.3%)	1 338 (0.4%)	581 (0.2%)
Other/unknown	19 926 (0.4%)	10 593 (0.5%)	879 (0.3%)	1 099 (0.3%)	9 333 (0.4%)	891 (0.3%)	4 527 (1.5%)
Discharge disposition							
Home	4 401 503 (98.9%)	2 280 300 (98.8%)	320 876 (98.8%)	323 994 (98.9%)	2 121 203 (98.9%)	324 325 (99.0%)	294 575 (98.8%)
Nursing home	25 329 (0.6%)	12 562 (0.5%)	1 732 (0.5%)	1 778 (0.5%)	12 767 (0.6%)	1 795 (0.5%)	2 011 (0.7%)
Other/unknown	25 156 (0.6%)	14 162 (0.6%)	2 079 (0.6%)	1 866 (0.6%)	10 994 (0.5%)	1 540 (0.5%)	1 439 (0.5%)
Previous emergency contacts							
Yes	530 076 (11.9%)	250 970 (10.9%)	23 582 (7.3%)	40 624 (12.4%)	279 106 (13.0%)	35 731 (10.9%)	35 758 (12.0%)
No	3 921 912 (88.1%)	2 056 054 (89.1%)	301 105 (92.7%)	287 014 (87.6%)	1 865 858 (87.0%)	291 929 (89.1%)	262 267 (88.0%)
Palliative care patient							
Yes	1 045 (0.0%)	621 (0.0%)	108 (0.0%)	77 (0.0%)	424 (0.0%)	76 (0.0%)	69 (0.0%)
No	4 450 943 (100.0%)	2 306 403 (100.0%)	324 579 (100.0%)	327 561 (100.0%)	2 144 540 (100.0%)	327 584 (100.0%)	297 956 (100.0%)
MDCs - medical/surgical							

	Overall	Period 1	Year 2008	Year 2014	Period 2	Year 2016	Year 2022
<i>MDC 01 (Surgical): Nervous System</i>	65 329 (1.5%)	28 424 (1.2%)	4 286 (1.3%)	3 850 (1.2%)	36 905 (1.7%)	5 624 (1.7%)	5 042 (1.7%)
<i>MDC 02 (Surgical): Eye</i>	135 615 (3.0%)	74 607 (3.2%)	11 157 (3.4%)	9 643 (2.9%)	61 008 (2.8%)	9 994 (3.1%)	8 123 (2.7%)
<i>MDC 03 (Surgical): Ear, Nose, Throat (ENT)</i>	422 770 (9.5%)	228 953 (9.9%)	33 799 (10.4%)	31 388 (9.6%)	193 817 (9.0%)	31 058 (9.5%)	26 011 (8.7%)
<i>MDC 04 (Surgical): Respiratory System</i>	43 991 (1.0%)	22 984 (1.0%)	2 884 (0.9%)	3 675 (1.1%)	21 007 (1.0%)	3 064 (0.9%)	2 942 (1.0%)
<i>MDC 05 (Surgical): Circulatory System</i>	609 578 (13.7%)	287 441 (12.5%)	38 835 (12.0%)	42 538 (13.0%)	322 137 (15.0%)	46 772 (14.3%)	46 220 (15.5%)
<i>MDC 06 (Surgical): Digestive System</i>	555 079 (12.5%)	291 372 (12.6%)	42 136 (13.0%)	41 693 (12.7%)	263 707 (12.3%)	41 247 (12.6%)	35 628 (12.0%)
<i>MDC 07 (Surgical): Hepatobiliary System</i>	213 074 (4.8%)	101 147 (4.4%)	13 305 (4.1%)	15 201 (4.6%)	111 927 (5.2%)	16 565 (5.1%)	16 303 (5.5%)
<i>MDC 08 (Surgical): Musculoskeletal System</i>	1 237 181 (27.8%)	648 513 (28.1%)	87 315 (26.9%)	94 015 (28.7%)	588 668 (27.4%)	91 551 (27.9%)	79 550 (26.7%)
<i>MDC 09 (Surgical): Skin/Breast</i>	362 343 (8.1%)	192 373 (8.3%)	26 756 (8.2%)	27 199 (8.3%)	169 970 (7.9%)	25 954 (7.9%)	23 924 (8.0%)
<i>MDC 11 (Surgical): Kidney/Urinary</i>	238 088 (5.3%)	118 476 (5.1%)	16 005 (4.9%)	17 157 (5.2%)	119 612 (5.6%)	16 726 (5.1%)	17 866 (6.0%)
<i>MDC 12 (Surgical): Male Reproductive</i>	160 215 (3.6%)	81 121 (3.5%)	12 282 (3.8%)	10 880 (3.3%)	79 094 (3.7%)	11 405 (3.5%)	12 309 (4.1%)
<i>MDC 13 (Surgical): Female Reproductive</i>	372 679 (8.4%)	215 377 (9.3%)	33 503 (10.3%)	28 242 (8.6%)	157 302 (7.3%)	24 872 (7.6%)	21 564 (7.2%)
<i>MDC 14 (Surgical): Pregnancy/Childbirth</i>	28 572 (0.6%)	12 476 (0.5%)	1 893 (0.6%)	1 627 (0.5%)	16 096 (0.8%)	2 269 (0.7%)	2 119 (0.7%)
<i>MDC 16 (Surgical): Blood/Immunological</i>	7 474 (0.2%)	3 760 (0.2%)	531 (0.2%)	530 (0.2%)	3 714 (0.2%)	559 (0.2%)	424 (0.1%)

Table 4 – Descriptives of main population and admission characteristics in subsample of day care stays

	Overall	Period 1	Year 2008	Year 2014	Period 2	Year 2016	Year 2022
<i>All admissions</i>	7 130 829 (100.0%)	3 442 591 (100.0%)	441 207 (100.0%)	527 363 (100.0%)	3 688 238 (100.0%)	533 437 (100.0%)	569 001 (100.0%)
<i>Sex</i>							
<i>Male</i>	3 189 693 (44.7%)	1 504 929 (43.7%)	189 918 (43.0%)	234 207 (44.4%)	1 684 764 (45.7%)	239 835 (45.0%)	264 326 (46.5%)
<i>Female</i>	3 941 136 (55.3%)	1 937 662 (56.3%)	251 289 (57.0%)	293 156 (55.6%)	2 003 474 (54.3%)	293 602 (55.0%)	304 675 (53.5%)
<i>Age</i>							
<i>Age group 0-15</i>	862 363 (12.1%)	466 648 (13.6%)	61 135 (13.9%)	65 166 (12.4%)	395 715 (10.7%)	64 403 (12.1%)	57 207 (10.1%)
<i>Age group 16-45</i>	1 851 608 (26.0%)	957 949 (27.8%)	131 699 (29.8%)	140 834 (26.7%)	893 659 (24.2%)	130 905 (24.5%)	132 500 (23.3%)
<i>Age group 46-60</i>	1 625 042 (22.8%)	774 303 (22.5%)	96 052 (21.8%)	122 574 (23.2%)	850 739 (23.1%)	124 814 (23.4%)	126 508 (22.2%)
<i>Age group 61-75</i>	1 678 015 (23.5%)	718 085 (20.9%)	87 215 (19.8%)	116 491 (22.1%)	959 930 (26.0%)	127 946 (24.0%)	158 155 (27.8%)
<i>Age group 76-85</i>	921 597 (12.9%)	441 031 (12.8%)	55 349 (12.5%)	68 434 (13.0%)	480 566 (13.0%)	70 307 (13.2%)	77 405 (13.6%)
<i>Age group over 85</i>	192 204 (2.7%)	84 575 (2.5%)	9 757 (2.2%)	13 864 (2.6%)	107 629 (2.9%)	15 062 (2.8%)	17 226 (3.0%)
<i>Elixhauser</i>							
<i>No comorbidities</i>	6 381 069 (89.5%)	3 109 537 (90.3%)	391 493 (88.7%)	477 695 (90.6%)	3 271 532 (88.7%)	479 059 (89.8%)	495 129 (87.0%)
<i>1 comorbidity</i>	493 454 (6.9%)	223 501 (6.5%)	33 636 (7.6%)	32 347 (6.1%)	269 953 (7.3%)	35 866 (6.7%)	47 851 (8.4%)



	Overall	Period 1	Year 2008	Year 2014	Period 2	Year 2016	Year 2022
2 comorbidities	173 358 (2.4%)	78 111 (2.3%)	11 690 (2.6%)	12 137 (2.3%)	95 247 (2.6%)	12 406 (2.3%)	16 164 (2.8%)
3 or more comorbidities	82 948 (1.2%)	31 442 (0.9%)	4 388 (1.0%)	5 184 (1.0%)	51 506 (1.4%)	6 106 (1.1%)	9 857 (1.7%)
Admission source							
Home	7 032 801 (98.6%)	3 407 967 (99.0%)	433 162 (98.2%)	520 996 (98.8%)	3 624 834 (98.3%)	526 345 (98.7%)	552 810 (97.2%)
Nursing home	4 151 (0.1%)	2 417 (0.1%)	387 (0.1%)	313 (0.1%)	1 734 (0.0%)	302 (0.1%)	252 (0.0%)
Other hospital	6 417 (0.1%)	2 768 (0.1%)	532 (0.1%)	344 (0.1%)	3 649 (0.1%)	1 901 (0.4%)	266 (0.0%)
Other/unknown	87 460 (1.2%)	29 439 (0.9%)	7 126 (1.6%)	5 710 (1.1%)	58 021 (1.6%)	4 889 (0.9%)	15 673 (2.8%)
Discharge disposition							
Home	7 075 252 (99.2%)	3 417 656 (99.3%)	433 885 (98.3%)	523 187 (99.2%)	3 657 596 (99.2%)	531 102 (99.6%)	563 058 (99.0%)
Nursing home	6 454 (0.1%)	2 935 (0.1%)	354 (0.1%)	493 (0.1%)	3 519 (0.1%)	468 (0.1%)	505 (0.1%)
Other/unknown	49 123 (0.7%)	22 000 (0.6%)	6 968 (1.6%)	3 683 (0.7%)	27 123 (0.7%)	1 867 (0.3%)	5 438 (1.0%)
Previous emergency contacts							
Yes	442 290 (6.2%)	208 174 (6.0%)	17 366 (3.9%)	35 124 (6.7%)	234 116 (6.3%)	28 377 (5.3%)	31 837 (5.6%)
No	6 688 539 (93.8%)	3 234 417 (94.0%)	423 841 (96.1%)	492 239 (93.3%)	3 454 122 (93.7%)	505 060 (94.7%)	537 164 (94.4%)
Palliative care patient							
Yes	46 (0.0%)	7 (0.0%)	0	1 (0.0%)	39 (0.0%)	4 (0.0%)	7 (0.0%)
No	7 130 783 (100.0%)	3 442 584 (100.0%)	441 207 (100.0%)	527 362 (100.0%)	3 688 199 (100.0%)	533 433 (100.0%)	568 994 (100.0%)
MDCs - medical/surgical							
MDC 01 (Surgical): Nervous System	474 772 (6.7%)	230 358 (6.7%)	29 919 (6.8%)	34 427 (6.5%)	244 414 (6.6%)	36 454 (6.8%)	35 332 (6.2%)
MDC 02 (Surgical): Eye	1 816 485 (25.5%)	855 618 (24.9%)	105 216 (23.8%)	134 283 (25.5%)	960 867 (26.1%)	139 826 (26.2%)	149 186 (26.2%)
MDC 03 (Surgical): Ear, Nose, Throat (ENT)	1 565 783 (22.0%)	778 039 (22.6%)	95 473 (21.6%)	117 190 (22.2%)	787 744 (21.4%)	113 135 (21.2%)	123 016 (21.6%)
MDC 04 (Surgical): Respiratory System	6 770 (0.1%)	2 686 (0.1%)	364 (0.1%)	407 (0.1%)	4 084 (0.1%)	484 (0.1%)	630 (0.1%)
MDC 05 (Surgical): Circulatory System	345 360 (4.8%)	161 858 (4.7%)	20 779 (4.7%)	25 460 (4.8%)	183 502 (5.0%)	26 478 (5.0%)	30 445 (5.4%)
MDC 06 (Surgical): Digestive System	339 069 (4.8%)	131 910 (3.8%)	15 765 (3.6%)	21 981 (4.2%)	207 159 (5.6%)	26 583 (5.0%)	35 303 (6.2%)
MDC 07 (Surgical): Hepatobiliary System	29 702 (0.4%)	6 585 (0.2%)	547 (0.1%)	1 343 (0.3%)	23 117 (0.6%)	2 246 (0.4%)	4 697 (0.8%)
MDC 08 (Surgical): Musculoskeletal System	1 579 199 (22.1%)	816 839 (23.7%)	110 283 (25.0%)	124 885 (23.7%)	762 360 (20.7%)	114 999 (21.6%)	112 279 (19.7%)
MDC 09 (Surgical): Skin/Breast	267 155 (3.7%)	115 278 (3.3%)	14 999 (3.4%)	18 411 (3.5%)	151 877 (4.1%)	21 267 (4.0%)	23 206 (4.1%)
MDC 11 (Surgical): Kidney/Urinary	131 171 (1.8%)	37 869 (1.1%)	4 664 (1.1%)	6 094 (1.2%)	93 302 (2.5%)	10 754 (2.0%)	16 330 (2.9%)
MDC 12 (Surgical): Male Reproductive	106 227 (1.5%)	52 127 (1.5%)	6 990 (1.6%)	7 538 (1.4%)	54 100 (1.5%)	8 477 (1.6%)	7 818 (1.4%)
MDC 13 (Surgical): Female Reproductive	325 284 (4.6%)	169 772 (4.9%)	23 644 (5.4%)	24 320 (4.6%)	155 512 (4.2%)	22 836 (4.3%)	23 416 (4.1%)
MDC 14 (Surgical): Pregnancy/Childbirth	133 260 (1.9%)	78 811 (2.3%)	11 911 (2.7%)	10 315 (2.0%)	54 449 (1.5%)	9 111 (1.7%)	6 459 (1.1%)
MDC 16 (Surgical): Blood/Immunological	10 592 (0.1%)	4 841 (0.1%)	653 (0.1%)	709 (0.1%)	5 751 (0.2%)	787 (0.1%)	884 (0.2%)

Table 5 – Information on day surgery logistic models

MDC	Period	Baseline		C-statistic	Covariates		
		Observations	Day surgery rate		Most important	Second most important	Third most important
MDC 01 (Surgical): Nervous System	2008-2014	106 469	88.4%	0.77	DRG classification	Elixhauser comorbidity	Age
	2016-2022	126 467	86.5%	0.88	DRG classification	Elixhauser comorbidity	Age
MDC 02 (Surgical): Eye	2008-2014	374 322	91.1%	0.68	Elixhauser comorbidity	Age	DRG classification
	2016-2022	447 094	93.6%	0.71	Elixhauser comorbidity	Age	DRG classification
MDC 03 (Surgical): Ear, Nose, Throat (ENT)	2008-2014	410 898	75.4%	0.80	Age	DRG classification	Elixhauser comorbidity
	2016-2022	437 864	79.2%	0.83	Age	DRG classification	Elixhauser comorbidity
MDC 04 (Surgical): Respiratory System	2008-2014	10 267	10.9%	0.81	Elixhauser comorbidity	DRG classification	Age
	2016-2022	10 756	14.8%	0.82	Elixhauser comorbidity	Age	Admission source
MDC 05 (Surgical): Circulatory System	2008-2014	184 990	34.9%	0.93	DRG classification	Elixhauser comorbidity	Age
	2016-2022	221 663	36.2%	0.95	DRG classification	Elixhauser comorbidity	Age
MDC 06 (Surgical): Digestive System	2008-2014	176 310	28.5%	0.79	DRG classification	Age	Elixhauser comorbidity
	2016-2022	207 066	40.9%	0.81	Elixhauser comorbidity	DRG classification	Age
MDC 07 (Surgical): Hepatobiliary System	2008-2014	43 435	4.7%	0.73	DRG classification	Elixhauser comorbidity	Age
	2016-2022	56 989	13.4%	0.78	DRG classification	Elixhauser comorbidity	Age
MDC 08 (Surgical): Musculoskeletal System	2008-2014	612 390	55.4%	0.82	DRG classification	Elixhauser comorbidity	Age
	2016-2022	615 658	55.4%	0.85	DRG classification	Elixhauser comorbidity	Age
MDC 09 (Surgical): Skin/Breast	2008-2014	127 421	36.0%	0.80	Elixhauser comorbidity	DRG classification	Sex
	2016-2022	140 289	46.0%	0.83	Elixhauser comorbidity	DRG classification	Sex
MDC 11 (Surgical): Kidney/Urinary	2008-2014	63 894	22.7%	0.75	Elixhauser comorbidity	DRG classification	Age
	2016-2022	86 299	40.9%	0.80	Elixhauser comorbidity	DRG classification	Sex
MDC 12 (Surgical): Male Reproductive	2008-2014	58 348	37.5%	0.91	Age	DRG classification	Elixhauser comorbidity
	2016-2022	59 429	42.0%	0.94	DRG classification	Elixhauser comorbidity	Age
MDC 13 (Surgical): Female Reproductive	2008-2014	168 782	42.5%	0.84	DRG classification	Elixhauser comorbidity	Age
	2016-2022	141 162	48.3%	0.84	DRG classification	Elixhauser comorbidity	Age
MDC 14 (Surgical): Pregnancy/Childbirth	2008-2014	41 018	86.0%	0.76	DRG classification	Elixhauser comorbidity	Admission source
	2016-2022	33 345	79.4%	0.87	DRG classification	Elixhauser comorbidity	Admission source
MDC 16 (Surgical): Blood/Immunological	2008-2014	3 654	55.1%	0.69	Elixhauser comorbidity	Age	Admission source
	2016-2022	4 026	58.2%	0.72	Elixhauser comorbidity	Age	Previous emergency contact



Table 6 – Information on readmission logistic models

MDC	Period	Baseline		C-statistic	Covariates		
		Observations	Readmission rate		Most important	Second most important	Third most important
MDC 01 (Surgical): Nervous System	2008-2014	106 469	1.0%	0.69	DRG classification	Age	Previous emergency contact
	2016-2022	126 467	0.9%	0.68	Age	Previous emergency contact	Elixhauser comorbidity
MDC 02 (Surgical): Eye	2008-2014	374 322	1.5%	0.63	Previous emergency contact	Age	Elixhauser comorbidity
	2016-2022	447 094	1.3%	0.64	Previous emergency contact	Age	Elixhauser comorbidity
MDC 03 (Surgical): Ear, Nose, Throat (ENT)	2008-2014	410 898	1.5%	0.69	DRG classification	Age	Previous emergency contact
	2016-2022	437 864	1.8%	0.72	DRG classification	Age	Previous emergency contact
MDC 04 (Surgical): Respiratory System	2008-2014	10 267	5.3%	0.62	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	10 756	5.8%	0.61	Elixhauser comorbidity	Age	Previous emergency contact
MDC 05 (Surgical): Circulatory System	2008-2014	184 990	3.1%	0.70	DRG classification	Age	Elixhauser comorbidity
	2016-2022	221 663	3.2%	0.71	DRG classification	Age	Elixhauser comorbidity
MDC 06 (Surgical): Digestive System	2008-2014	176 310	2.9%	0.68	DRG classification	Age	Elixhauser comorbidity
	2016-2022	207 066	3.1%	0.68	DRG classification	Age	Elixhauser comorbidity
MDC 07 (Surgical): Hepatobiliary System	2008-2014	43 435	3.0%	0.64	DRG classification	Age	Previous emergency contact
	2016-2022	56 989	3.6%	0.65	DRG classification	Previous emergency contact	Age
MDC 08 (Surgical): Musculoskeletal System	2008-2014	612 390	1.2%	0.66	Age	Elixhauser comorbidity	DRG classification
	2016-2022	615 658	1.2%	0.68	Age	Elixhauser comorbidity	DRG classification
MDC 09 (Surgical): Skin/Breast	2008-2014	127 421	1.8%	0.64	Elixhauser comorbidity	Age	DRG classification
	2016-2022	140 289	1.7%	0.66	Elixhauser comorbidity	Age	DRG classification
MDC 11 (Surgical): Kidney/Urinary	2008-2014	63 894	5.2%	0.61	Age	DRG classification	Elixhauser comorbidity
	2016-2022	86 299	5.3%	0.61	Age	Elixhauser comorbidity	Previous emergency contact
MDC 12 (Surgical): Male Reproductive	2008-2014	58 348	3.7%	0.72	Age	DRG classification	Elixhauser comorbidity
	2016-2022	59 429	4.6%	0.73	Age	DRG classification	Elixhauser comorbidity
MDC 13 (Surgical): Female Reproductive	2008-2014	168 782	1.7%	0.62	Age	Previous emergency contact	Elixhauser comorbidity
	2016-2022	141 162	1.7%	0.62	Elixhauser comorbidity	DRG classification	Age
MDC 14 (Surgical): Pregnancy/Childbirth	2008-2014	41 018	1.6%	0.62	DRG classification	Age	Previous emergency contact
	2016-2022	33 345	1.5%	0.61	DRG classification	Previous emergency contact	Age
MDC 16 (Surgical): Blood/Immunological	2008-2014	3 654	3.1%	0.68	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	4 026	3.3%	0.64	Elixhauser comorbidity	Age	Previous emergency contact

2 SUPPLEMENT TO CHAPTER 2

Table 7 – Information on LOS count models

MDC	Period	Baseline		Mean Absolute Error	Covariates		
		Observations	Mean LoS		Most important	Second most important	Third most important
<i>MDC 01 (Medical): Nervous System</i>	2008-2014	235 888	7.3	4.8	Elixhauser comorbidity	Age	DRG classification
	2016-2022	265 822	7.5	5.9	Elixhauser comorbidity	DRG classification	Age
<i>MDC 02 (Medical): Eye</i>	2008-2014	8 962	5.3	3.4	Elixhauser comorbidity	Age	DRG classification
	2016-2022	9 098	5.3	3.6	Elixhauser comorbidity	DRG classification	Discharge disposition
<i>MDC 03 (Medical): Ear, Nose, Throat (ENT)</i>	2008-2014	162 618	2.2	1.5	Age	DRG classification	Elixhauser comorbidity
	2016-2022	258 113	1.9	1.3	Age	DRG classification	Elixhauser comorbidity
<i>MDC 04 (Medical): Respiratory System</i>	2008-2014	295 630	8.0	4.4	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	310 024	7.6	4.4	Elixhauser comorbidity	Age	Discharge disposition
<i>MDC 05 (Medical): Circulatory System</i>	2008-2014	282 157	5.6	3.7	Elixhauser comorbidity	Discharge disposition	Age
	2016-2022	265 267	5.6	3.8	Elixhauser comorbidity	Discharge disposition	Age
<i>MDC 06 (Medical): Digestive System</i>	2008-2014	267 876	4.8	3.0	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	267 340	4.3	2.8	Elixhauser comorbidity	Discharge disposition	Age
<i>MDC 07 (Medical): Hepatobiliary System</i>	2008-2014	59 646	7.5	4.8	Elixhauser comorbidity	Age	DRG classification
	2016-2022	60 502	6.8	4.3	Elixhauser comorbidity	Discharge disposition	DRG classification
<i>MDC 08 (Medical): Musculoskeletal System</i>	2008-2014	145 449	8.7	5.5	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	135 434	9.7	6.3	Elixhauser comorbidity	Age	DRG classification
<i>MDC 09 (Medical): Skin/Breast</i>	2008-2014	69 869	7.2	4.8	Elixhauser comorbidity	Age	DRG classification
	2016-2022	70 373	7.0	4.4	Elixhauser comorbidity	Age	Discharge disposition
<i>MDC 10 (Medical): Endocrine/Metabolic</i>	2008-2014	71 318	6.9	4.3	Age	Elixhauser comorbidity	Discharge disposition
	2016-2022	70 663	6.6	4.1	Elixhauser comorbidity	Age	Discharge disposition
<i>MDC 11 (Medical): Kidney/Urinary</i>	2008-2014	110 108	5.7	3.5	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	123 964	5.8	3.5	Elixhauser comorbidity	Age	Discharge disposition
<i>MDC 12 (Medical): Male Reproductive</i>	2008-2014	12 760	4.9	3.2	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	14 956	5.2	3.4	Elixhauser comorbidity	Age	Discharge disposition
<i>MDC 13 (Medical): Female Reproductive</i>	2008-2014	12 277	3.8	2.7	Elixhauser comorbidity	DRG classification	Age
	2016-2022	9 161	3.8	2.8	Elixhauser comorbidity	Age	DRG classification
<i>MDC 14 (Medical): Pregnancy/Childbirth</i>	2008-2014	318 269	4.2	1.3	DRG classification	Discharge disposition	Elixhauser comorbidity
	2016-2022	287 724	3.2	1.1	Discharge disposition	DRG classification	Admission source
<i>MDC 15 (Medical): Newborn/Neonates</i>	2008-2014	22 129	18.4	6.6	Admission source	DRG classification	Discharge disposition
	2016-2022	35 249	14.1	5.5	Admission source	DRG classification	Discharge disposition

MDC	Period	Baseline		Mean Absolute Error	Covariates		
		Observations	Mean LoS		Most important	Second most important	Third most important
<i>MDC 16 (Medical): Blood/Immunological</i>	2008-2014	28 936	6.7	5.6	Age	Elixhauser comorbidity	Discharge disposition
	2016-2022	30 246	6.4	4.3	Discharge disposition	Elixhauser comorbidity	DRG classification
<i>MDC 17 (Medical): Neoplasms</i>	2008-2014	63 075	4.5	3.5	DRG classification	Elixhauser comorbidity	Age
	2016-2022	50 065	4.7	3.7	DRG classification	Age	Discharge disposition
<i>MDC 18 (Medical): Infectious Diseases</i>	2008-2014	45 762	7.1	3.9	Elixhauser comorbidity	DRG classification	Age
	2016-2022	63 458	7.2	3.9	Elixhauser comorbidity	DRG classification	Age
<i>MDC 01 (Surgical): Nervous System</i>	2008-2014	38 513	7.9	5.2	Elixhauser comorbidity	DRG classification	Discharge disposition
	2016-2022	44 580	7.6	5.8	Elixhauser comorbidity	DRG classification	Discharge disposition
<i>MDC 02 (Surgical): Eye</i>	2008-2014	36 521	1.6	0.8	Elixhauser comorbidity	DRG classification	Discharge disposition
	2016-2022	31 643	1.4	0.6	Elixhauser comorbidity	DRG classification	Age
<i>MDC 03 (Surgical): Ear, Nose, Throat (ENT)</i>	2008-2014	107 037	2.1	1.2	Elixhauser comorbidity	DRG classification	Age
	2016-2022	98 635	2.0	1.2	Elixhauser comorbidity	DRG classification	Age
<i>MDC 04 (Surgical): Respiratory System</i>	2008-2014	13 258	11.1	6.4	Discharge disposition	Age	Palliative status
	2016-2022	15 933	10.8	6.8	Elixhauser comorbidity	Discharge disposition	Age
<i>MDC 05 (Surgical): Circulatory System</i>	2008-2014	202 326	5.9	3.9	Elixhauser comorbidity	DRG classification	Age
	2016-2022	236 115	4.8	3.5	Elixhauser comorbidity	Discharge disposition	Age
<i>MDC 06 (Surgical): Digestive System</i>	2008-2014	197 476	5.5	3.2	DRG classification	Elixhauser comorbidity	Age
	2016-2022	198 136	4.7	3.2	DRG classification	Elixhauser comorbidity	Age
<i>MDC 07 (Surgical): Hepatobiliary System</i>	2008-2014	57 917	4.3	2.9	Elixhauser comorbidity	Age	DRG classification
	2016-2022	70 991	3.8	3.0	Elixhauser comorbidity	Age	DRG classification
<i>MDC 08 (Surgical): Musculoskeletal System</i>	2008-2014	517 184	5.8	3.5	Elixhauser comorbidity	Age	DRG classification
	2016-2022	554 015	6.0	5.0	Elixhauser comorbidity	Age	DRG classification
<i>MDC 09 (Surgical): Skin/Breast</i>	2008-2014	86 946	4.0	2.6	Elixhauser comorbidity	DRG classification	Age
	2016-2022	84 211	3.4	2.5	Elixhauser comorbidity	DRG classification	Age
<i>MDC 10 (Surgical): Endocrine/Metabolic</i>	2008-2014	45 885	3.8	1.9	DRG classification	Elixhauser comorbidity	Age
	2016-2022	65 510	2.6	1.3	DRG classification	Age	Discharge disposition
<i>MDC 11 (Surgical): Kidney/Urinary</i>	2008-2014	69 956	4.8	3.0	DRG classification	Elixhauser comorbidity	Age
	2016-2022	75 157	3.8	2.7	DRG classification	Elixhauser comorbidity	Age
<i>MDC 12 (Surgical): Male Reproductive</i>	2008-2014	53 590	4.8	2.3	DRG classification	Elixhauser comorbidity	Age
	2016-2022	50 028	3.5	1.9	DRG classification	Elixhauser comorbidity	Age
<i>MDC 13 (Surgical): Female Reproductive</i>	2008-2014	108 870	3.6	1.9	DRG classification	Age	Elixhauser comorbidity
	2016-2022	80 923	2.7	1.5	DRG classification	Age	Elixhauser comorbidity
<i>MDC 14 (Surgical): Pregnancy/Childbirth</i>	2008-2014	79 103	5.7	1.6	DRG classification	Elixhauser comorbidity	Admission source
	2016-2022	87 068	4.4	1.4	DRG classification	Admission source	Elixhauser comorbidity

MDC	Period	Baseline		Mean Absolute Error	Covariates		
		Observations	Mean LoS		Most important	Second most important	Third most important
<i>MDC 15 (Surgical): Newborn/Neonates</i>	2008-2014	829	48.0	20.2	Elixhauser comorbidity	Admission source	DRG classification
	2016-2022	918	41.1	20.6	Admission source	Age	Discharge disposition
<i>MDC 16 (Surgical): Blood/Immunological</i>	2008-2014	2 496	5.2	3.8	DRG classification	Elixhauser comorbidity	Age
	2016-2022	2 535	4.8	3.8	Elixhauser comorbidity	DRG classification	Age
<i>MDC 17 (Surgical): Neoplasms</i>	2008-2014	7 762	8.4	6.3	DRG classification	Discharge disposition	Age
	2016-2022	9 994	7.9	6.7	DRG classification	Elixhauser comorbidity	Discharge disposition
<i>MDC 18 (Surgical): Infectious Diseases</i>	2008-2014	4 308	16.6	11.0	Elixhauser comorbidity	Age	Discharge disposition
	2016-2022	7 881	18.3	12.9	Elixhauser comorbidity	DRG classification	Age

Note: Zero-truncated Poisson regressions were used instead of zero-truncated negative binomial regressions for Medical MDC 08 (Musculoskeletal system), Surgical MDC 04 (Respiratory system), Surgical MDC 15 (Newborn/Neonates), and Surgical MDC 18 (Infectious diseases) in period 2, as well as for Medical MDC 06 (Digestive system) in period 1.

Table 8 – Information on readmission logistic models

MDC	Period	Baseline		C-statistic	Covariates		
		Observations	Readmission rate		Most important	Second most important	Third most important
<i>MDC 01 (Medical): Nervous System</i>	2008-2014	235 888	5.9%	0.65	Previous emergency contact	DRG classification	Age
	2016-2022	265 822	5.7%	0.66	Elixhauser comorbidity	DRG classification	Previous emergency contact
<i>MDC 02 (Medical): Eye</i>	2008-2014	8 962	4.7%	0.66	Age	Previous emergency contact	Elixhauser comorbidity
	2016-2022	9 098	4.7%	0.65	Age	Previous emergency contact	Elixhauser comorbidity
<i>MDC 03 (Medical): Ear, Nose, Throat (ENT)</i>	2008-2014	162 618	2.8%	0.70	Age	DRG classification	Previous emergency contact
	2016-2022	258 113	2.4%	0.75	Age	DRG classification	Previous emergency contact
<i>MDC 04 (Medical): Respiratory System</i>	2008-2014	295 630	8.6%	0.67	Previous emergency contact	Age	DRG classification
	2016-2022	310 024	8.7%	0.67	Previous emergency contact	DRG classification	Elixhauser comorbidity
<i>MDC 05 (Medical): Circulatory System</i>	2008-2014	282 157	7.1%	0.68	DRG classification	Age	Elixhauser comorbidity
	2016-2022	265 267	7.6%	0.68	DRG classification	Elixhauser comorbidity	Previous emergency contact
<i>MDC 06 (Medical): Digestive System</i>	2008-2014	267 876	6.1%	0.63	Previous emergency contact	Elixhauser comorbidity	Age
	2016-2022	267 340	6.4%	0.63	Elixhauser comorbidity	Previous emergency contact	DRG classification
<i>MDC 07 (Medical): Hepatobiliary System</i>	2008-2014	59 646	9.8%	0.59	Previous emergency contact	DRG classification	Elixhauser comorbidity
	2016-2022	60 502	10.5%	0.59	Previous emergency contact	Elixhauser comorbidity	DRG classification
<i>MDC 08 (Medical): Musculoskeletal System</i>	2008-2014	145 449	6.5%	0.65	Age	Previous emergency contact	Elixhauser comorbidity
	2016-2022	135 434	7.0%	0.63	Age	Previous emergency contact	Elixhauser comorbidity

MDC	Period	Baseline		C-statistic	Covariates		
		Observations	Readmission rate		Most important	Second most important	Third most important
MDC 09 (Medical): Skin/Breast	2008-2014	69 869	5.8%	0.68	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	70 373	6.0%	0.67	Elixhauser comorbidity	Age	Previous emergency contact
MDC 10 (Medical): Endocrine/Metabolic	2008-2014	71 318	6.2%	0.66	Previous emergency contact	Age	DRG classification
	2016-2022	70 663	6.8%	0.66	Previous emergency contact	Age	DRG classification
MDC 11 (Medical): Kidney/Urinary	2008-2014	110 108	8.4%	0.61	Age	DRG classification	Previous emergency contact
	2016-2022	123 964	8.9%	0.61	Previous emergency contact	Age	DRG classification
MDC 12 (Medical): Male Reproductive	2008-2014	12 760	7.1%	0.66	Age	Elixhauser comorbidity	Previous emergency contact
	2016-2022	14 956	6.9%	0.65	Age	Elixhauser comorbidity	Previous emergency contact
MDC 13 (Medical): Female Reproductive	2008-2014	12 277	4.7%	0.62	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	9 161	5.0%	0.65	Elixhauser comorbidity	Age	Previous emergency contact
MDC 14 (Medical): Pregnancy/Childbirth	2008-2014	318 269	4.4%	0.87	DRG classification	Previous emergency contact	Elixhauser comorbidity
	2016-2022	287 724	4.2%	0.85	DRG classification	Previous emergency contact	Elixhauser comorbidity
MDC 15 (Medical): Newborn/Neonates	2008-2014	22 129	5.4%	0.58	DRG classification	Elixhauser comorbidity	Previous emergency contact
	2016-2022	35 249	6.1%	0.56	DRG classification	Sex	Admission source
MDC 16 (Medical): Blood/Immunological	2008-2014	28 936	8.1%	0.63	DRG classification	Elixhauser comorbidity	Previous emergency contact
	2016-2022	30 246	8.6%	0.62	DRG classification	Elixhauser comorbidity	Age
MDC 17 (Medical): Neoplasms	2008-2014	63 075	10.0%	0.58	Previous emergency contact	Elixhauser comorbidity	Age
	2016-2022	50 065	11.2%	0.58	Previous emergency contact	Elixhauser comorbidity	Age
MDC 18 (Medical): Infectious Diseases	2008-2014	45 762	6.3%	0.66	Previous emergency contact	Elixhauser comorbidity	Age
	2016-2022	63 458	6.8%	0.66	Elixhauser comorbidity	Previous emergency contact	Age
MDC 01 (Surgical): Nervous System	2008-2014	38 513	5.0%	0.65	DRG classification	Age	Elixhauser comorbidity
	2016-2022	44 580	5.0%	0.68	DRG classification	Elixhauser comorbidity	Age
MDC 02 (Surgical): Eye	2008-2014	36 521	2.7%	0.62	Age	Previous emergency contact	Elixhauser comorbidity
	2016-2022	31 643	2.1%	0.65	Elixhauser comorbidity	Previous emergency contact	Age
MDC 03 (Surgical): Ear, Nose, Throat (ENT)	2008-2014	107 037	2.4%	0.72	DRG classification	Elixhauser comorbidity	Age
	2016-2022	98 635	2.9%	0.74	DRG classification	Age	Elixhauser comorbidity
MDC 04 (Surgical): Respiratory System	2008-2014	13 258	6.9%	0.63	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	15 933	8.0%	0.62	Elixhauser comorbidity	Age	Previous emergency contact
MDC 05 (Surgical): Circulatory System	2008-2014	202 326	5.9%	0.64	Elixhauser comorbidity	DRG classification	Age
	2016-2022	236 115	6.0%	0.65	Elixhauser comorbidity	Age	DRG classification
MDC 06 (Surgical): Digestive System	2008-2014	197 476	4.3%	0.67	DRG classification	Elixhauser comorbidity	Age
	2016-2022	198 136	5.0%	0.67	DRG classification	Elixhauser comorbidity	Age
	2008-2014	57 917	4.0%	0.67	DRG classification	Elixhauser comorbidity	Age

MDC	Period	Baseline		C-statistic	Covariates		
		Observations	Readmission rate		Most important	Second most important	Third most important
<i>MDC 07 (Surgical): Hepatobiliary System</i>	2016-2022	70 991	4.8%	0.68	DRG classification	Age	Elixhauser comorbidity
<i>MDC 08 (Surgical): Musculoskeletal System</i>	2008-2014	517 184	2.6%	0.70	Age	Elixhauser comorbidity	DRG classification
	2016-2022	554 015	2.8%	0.71	Age	Elixhauser comorbidity	DRG classification
<i>MDC 09 (Surgical): Skin/Breast</i>	2008-2014	86 946	2.4%	0.67	DRG classification	Elixhauser comorbidity	Previous emergency contact
	2016-2022	84 211	2.6%	0.68	DRG classification	Elixhauser comorbidity	Age
<i>MDC 10 (Surgical): Endocrine/Metabolic</i>	2008-2014	45 885	3.1%	0.66	DRG classification	Age	Elixhauser comorbidity
	2016-2022	65 510	3.4%	0.63	DRG classification	Elixhauser comorbidity	Previous emergency contact
<i>MDC 11 (Surgical): Kidney/Urinary</i>	2008-2014	69 956	7.0%	0.60	DRG classification	Age	Elixhauser comorbidity
	2016-2022	75 157	7.6%	0.61	DRG classification	Age	Elixhauser comorbidity
<i>MDC 12 (Surgical): Male Reproductive</i>	2008-2014	53 590	5.5%	0.64	Age	Elixhauser comorbidity	DRG classification
	2016-2022	50 028	6.9%	0.63	Age	Elixhauser comorbidity	DRG classification
<i>MDC 13 (Surgical): Female Reproductive</i>	2008-2014	108 870	2.6%	0.62	Elixhauser comorbidity	DRG classification	Age
	2016-2022	80 923	2.8%	0.61	DRG classification	Elixhauser comorbidity	Age
<i>MDC 14 (Surgical): Pregnancy/Childbirth</i>	2008-2014	79 103	1.7%	0.62	DRG classification	Elixhauser comorbidity	Age
	2016-2022	87 068	1.6%	0.60	DRG classification	Elixhauser comorbidity	Previous emergency contact
<i>MDC 15 (Surgical): Newborn/Neonates</i>	2008-2014	829	12.2%	0.57	DRG classification	Elixhauser comorbidity	Sex
	2016-2022	918	12.1%	0.56	DRG classification	Elixhauser comorbidity	Sex
<i>MDC 16 (Surgical): Blood/Immunological</i>	2008-2014	2 496	5.5%	0.66	Age	DRG classification	Previous emergency contact
	2016-2022	2 535	5.1%	0.71	Age	Elixhauser comorbidity	DRG classification
<i>MDC 17 (Surgical): Neoplasms</i>	2008-2014	7 762	6.3%	0.63	Age	Elixhauser comorbidity	Previous emergency contact
	2016-2022	9 994	7.7%	0.62	Previous emergency contact	Age	Elixhauser comorbidity
<i>MDC 18 (Surgical): Infectious Diseases</i>	2008-2014	4 308	7.1%	0.65	Elixhauser comorbidity	Age	Previous emergency contact
	2016-2022	7 881	9.5%	0.62	Previous emergency contact	Elixhauser comorbidity	Age



Table 9 – Information on mortality logistic models

	Period	Baseline		C-statistic	Covariates		
		Observations	Mortality rate		Most important	Second most important	Third most important
<i>MDC 01 (Medical): Nervous System</i>	2016-2022	265 822	1.4%	0.88	DRG classification	Admission source	Palliative status
<i>MDC 02 (Medical): Eye</i>	2016-2022	9 098	0.5%	0.91	Admission source	DRG classification	Palliative status
<i>MDC 03 (Medical): Ear, Nose, Throat (ENT)</i>	2008-2014	258 113	0.2%	0.94	DRG classification	Age	Palliative status
<i>MDC 04 (Medical): Respiratory System</i>	2016-2022	310 024	2.4%	0.86	Palliative status	DRG classification	Age
<i>MDC 05 (Medical): Circulatory System</i>	2008-2014	265 267	1.6%	0.86	DRG classification	Admission source	Age
<i>MDC 06 (Medical): Digestive System</i>	2016-2022	267 340	1.0%	0.91	Palliative status	DRG classification	Admission source
<i>MDC 07 (Medical): Hepatobiliary System</i>	2008-2014	60 502	2.7%	0.88	DRG classification	Palliative status	Admission source
<i>MDC 08 (Medical): Musculoskeletal System</i>	2016-2022	135 434	1.4%	0.86	Admission source	DRG classification	Age
<i>MDC 09 (Medical): Skin/Breast</i>	2016-2022	70 373	1.4%	0.89	DRG classification	Palliative status	Admission source
<i>MDC 10 (Medical): Endocrine/Metabolic</i>	2016-2022	70 663	1.6%	0.89	Palliative status	Admission source	Age
<i>MDC 11 (Medical): Kidney/Urinary</i>	2016-2022	123 964	1.7%	0.88	Palliative status	Age	Admission source
<i>MDC 12 (Medical): Male Reproductive</i>	2016-2022	14 956	1.5%	0.88	Palliative status	Admission source	DRG classification
<i>MDC 13 (Medical): Female Reproductive</i>	2016-2022	9 161	1.7%	0.94	Palliative status	Elixhauser comorbidity	DRG classification
<i>MDC 14 (Medical): Pregnancy/Childbirth</i>	2016-2022	287 724	0.0%	NE	NE	NE	NE
<i>MDC 15 (Medical): Newborn/Neonates</i>	2016-2022	35 249	0.1%	NE	NE	NE	NE
<i>MDC 16 (Medical): Blood/Immunological</i>	2016-2022	30 246	2.0%	0.80	Palliative status	Admission source	Age
<i>MDC 17 (Medical): Neoplasms</i>	2016-2022	50 065	2.4%	0.78	Palliative status	DRG classification	Age
<i>MDC 18 (Medical): Infectious Diseases</i>	2016-2022	63 458	1.3%	0.91	Palliative status	Admission source	Age
<i>MDC 01 (Surgical): Nervous System</i>	2016-2022	44 580	0.5%	0.84	Palliative status	Age	DRG classification
<i>MDC 02 (Surgical): Eye</i>	2016-2022	31 643	0.1%	0.79	Age	Elixhauser comorbidity	Previous emergency contact

	Period	Baseline		C-statistic	Covariates		
		Observations	Mortality rate		Most important	Second most important	Third most important
<i>MDC 03 (Surgical): Ear, Nose, Throat (ENT)</i>	2016-2022	98 635	0.1%	0.92	Elixhauser comorbidity	Palliative status	Age
<i>MDC 04 (Surgical): Respiratory System</i>	2016-2022	15 933	1.6%	0.81	Palliative status	Age	Admission source
<i>MDC 05 (Surgical): Circulatory System</i>	2016-2022	236 115	0.5%	0.81	Age	Admission source	Elixhauser comorbidity
<i>MDC 06 (Surgical): Digestive System</i>	2016-2022	198 136	0.4%	0.90	Palliative status	DRG classification	Age
<i>MDC 07 (Surgical): Hepatobiliary System</i>	2016-2022	70 991	0.5%	0.93	DRG classification	Age	Elixhauser comorbidity
<i>MDC 08 (Surgical): Musculoskeletal System</i>	2016-2022	554 015	0.4%	0.94	Age	Admission source	DRG classification
<i>MDC 09 (Surgical): Skin/Breast</i>	2016-2022	84 211	0.2%	0.94	Admission source	Age	DRG classification
<i>MDC 10 (Surgical): Endocrine/Metabolic</i>	2016-2022	65 510	0.1%	0.88	DRG classification	Age	Elixhauser comorbidity
<i>MDC 11 (Surgical): Kidney/Urinary</i>	2016-2022	75 157	0.4%	0.87	Age	Palliative status	Elixhauser comorbidity
<i>MDC 12 (Surgical): Male Reproductive</i>	2016-2022	50 028	0.2%	0.86	Age	Palliative status	Elixhauser comorbidity
<i>MDC 13 (Surgical): Female Reproductive</i>	2016-2022	80 923	0.1%	NE	NE	NE	NE
<i>MDC 14 (Surgical): Pregnancy/Childbirth</i>	2016-2022	87 068	0.0%	NE	NE	NE	NE
<i>MDC 15 (Surgical): Newborn/Neonates</i>	2016-2022	918	0.2%	NE	NE	NE	NE
<i>MDC 16 (Surgical): Blood/Immunological</i>	2016-2022	2 535	0.2%	NE	NE	NE	NE
<i>MDC 17 (Surgical): Neoplasms</i>	2016-2022	9 994	1.4%	0.79	Palliative status	Age	Elixhauser comorbidity
<i>MDC 18 (Surgical): Infectious Diseases</i>	2016-2022	7 881	1.9%	0.86	Palliative status	Age	Elixhauser comorbidity

Note: Mortality models for MDC 14 (Pregnancy/Childbirth), MDC 15 (Newborn/Neonates), MDC 13 (Surgical: Female reproductive system), MDC 16 (Surgical: Blood/Immunological) were not estimated (NE) due to an insufficient number of events.



Table 10 – Information on composite logistic models

	Period	Baseline		C-statistic	Covariates		
		Observations	Composite rate		Most important	Second most important	Third most important
<i>MDC 01 (Medical): Nervous System</i>	2016-2022	265 822	6.8%	0.70	Age	DRG classification	Elixhauser comorbidity
<i>MDC 02 (Medical): Eye</i>	2016-2022	9 098	5.1%	0.67	Age	Previous emergency contact	Elixhauser comorbidity
<i>MDC 03 (Medical): Ear, Nose, Throat (ENT)</i>	2008-2014	258 113	2.5%	0.76	DRG classification	Age	Previous emergency contact
<i>MDC 04 (Medical): Respiratory System</i>	2016-2022	310 024	10.4%	0.70	DRG classification	Age	Previous emergency contact
<i>MDC 05 (Medical): Circulatory System</i>	2008-2014	265 267	8.6%	0.70	DRG classification	Elixhauser comorbidity	Age
<i>MDC 06 (Medical): Digestive System</i>	2016-2022	267 340	7.1%	0.66	Elixhauser comorbidity	Previous emergency contact	DRG classification
<i>MDC 07 (Medical): Hepatobiliary System</i>	2008-2014	60 502	12.4%	0.63	DRG classification	Palliative status	Elixhauser comorbidity
<i>MDC 08 (Medical): Musculoskeletal System</i>	2016-2022	135 434	8.0%	0.66	Age	Elixhauser comorbidity	DRG classification
<i>MDC 09 (Medical): Skin/Breast</i>	2016-2022	70 373	7.0%	0.71	Age	Elixhauser comorbidity	Previous emergency contact
<i>MDC 10 (Medical): Endocrine/Metabolic</i>	2016-2022	70 663	8.0%	0.70	Previous emergency contact	Age	DRG classification
<i>MDC 11 (Medical): Kidney/Urinary</i>	2016-2022	123 964	10.1%	0.65	Age	Elixhauser comorbidity	Previous emergency contact
<i>MDC 12 (Medical): Male Reproductive</i>	2016-2022	14 956	8.1%	0.69	Age	Elixhauser comorbidity	Palliative status
<i>MDC 13 (Medical): Female Reproductive</i>	2016-2022	9 161	6.4%	0.71	Elixhauser comorbidity	Palliative status	Age
<i>MDC 14 (Medical): Pregnancy/Childbirth</i>	2016-2022	287 724	4.2%	0.85	DRG classification	Previous emergency contact	Elixhauser comorbidity
<i>MDC 15 (Medical): Newborn/Neonates</i>	2016-2022	35 249	6.1%	0.56	DRG classification	Sex	Admission source
<i>MDC 16 (Medical): Blood/Immunological</i>	2016-2022	30 246	10.0%	0.64	DRG classification	Age	Elixhauser comorbidity
<i>MDC 17 (Medical): Neoplasms</i>	2016-2022	50 065	12.8%	0.61	Previous emergency contact	Palliative status	Elixhauser comorbidity
<i>MDC 18 (Medical): Infectious Diseases</i>	2016-2022	63 458	7.9%	0.69	Elixhauser comorbidity	Age	Previous emergency contact
<i>MDC 01 (Surgical): Nervous System</i>	2016-2022	44 580	5.2%	0.69	DRG classification	Age	Elixhauser comorbidity

	Period	Baseline		C-statistic	Covariates		
		Observations	Composite rate		Most important	Second most important	Third most important
<i>MDC 02 (Surgical): Eye</i>	2016-2022	31 643	2.1%	0.66	Elixhauser comorbidity	Previous emergency contact	Age
<i>MDC 03 (Surgical): Ear, Nose, Throat (ENT)</i>	2016-2022	98 635	3.0%	0.74	DRG classification	Age	Elixhauser comorbidity
<i>MDC 04 (Surgical): Respiratory System</i>	2016-2022	15 933	9.1%	0.65	Elixhauser comorbidity	Age	Palliative status
<i>MDC 05 (Surgical): Circulatory System</i>	2016-2022	236 115	6.3%	0.65	Elixhauser comorbidity	Age	DRG classification
<i>MDC 06 (Surgical): Digestive System</i>	2016-2022	198 136	5.2%	0.68	DRG classification	Elixhauser comorbidity	Age
<i>MDC 07 (Surgical): Hepatobiliary System</i>	2016-2022	70 991	5.1%	0.69	DRG classification	Age	Elixhauser comorbidity
<i>MDC 08 (Surgical): Musculoskeletal System</i>	2016-2022	554 015	3.0%	0.73	Age	Elixhauser comorbidity	DRG classification
<i>MDC 09 (Surgical): Skin/Breast</i>	2016-2022	84 211	2.7%	0.69	DRG classification	Elixhauser comorbidity	Age
<i>MDC 10 (Surgical): Endocrine/Metabolic</i>	2016-2022	65 510	3.5%	0.63	DRG classification	Elixhauser comorbidity	Previous emergency contact
<i>MDC 11 (Surgical): Kidney/Urinary</i>	2016-2022	75 157	7.8%	0.62	Age	DRG classification	Elixhauser comorbidity
<i>MDC 12 (Surgical): Male Reproductive</i>	2016-2022	50 028	7.1%	0.64	Age	Elixhauser comorbidity	DRG classification
<i>MDC 13 (Surgical): Female Reproductive</i>	2016-2022	80 923	2.8%	0.61	DRG classification	Elixhauser comorbidity	Age
<i>MDC 14 (Surgical): Pregnancy/Childbirth</i>	2016-2022	87 068	1.6%	0.60	DRG classification	Elixhauser comorbidity	Previous emergency contact
<i>MDC 15 (Surgical): Newborn/Neonates</i>	2016-2022	918	12.2%	0.57	DRG classification	Elixhauser comorbidity	Admission source
<i>MDC 16 (Surgical): Blood/Immunological</i>	2016-2022	2 535	5.2%	0.71	Age	Elixhauser comorbidity	Previous emergency contact
<i>MDC 17 (Surgical): Neoplasms</i>	2016-2022	9 994	8.6%	0.64	Age	Elixhauser comorbidity	Previous emergency contact
<i>MDC 18 (Surgical): Infectious Diseases</i>	2016-2022	7 881	10.9%	0.65	Elixhauser comorbidity	Previous emergency contact	Age



3 SUPPLEMENT TO CHAPTER 3

3.1 Methods – search strategy

3.1.1 Medline

Date	June 20, 2025	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to June 20, 2025>	
Search strategy		
1	*"Length of Stay"/	15062
2	"length of stay".ti,kf.	11374
3	"hospital stay".ti,kf.	4026
4	(day adj3 hospital*).ti,kf.	2633
5	(duration adj3 stay).ti,kf.	304
6	(stay adj2 time).ti,kf.	53
7	early discharge.ti,kf.	1144
8	((short* or decreas* or reduc*) adj2 stay).ti,kf.	1140
9	2 or 3 or 4 or 5 or 6 or 7 or 8	19580
10	1 or 9	28015
11	(outpatient? adj5 inpatient?).ti,kf.	1785
12	*hospitalization/ and *Ambulatory surgical procedures/	191
13	(day care adj3 (standard or normal or usual) adj3 (care or procedure)).ti,kf.	1
14	(day care adj3 hospitali#ation?).ti,kf.	8
15	(hospitali#ation? adj3 ambulatory).ti,kf.	232
16	one day surgery.ti,kf.	77
17	day surgery.ti,kf.	1502
18	11 or 12 or 13 or 14 or 15 or 16 or 17	3657
19	10 or 18	31548
20	Patient readmission/	25612
21	readmission?.ab,ti,kf.	50088
22	re-admission?.ab,ti,kf.	3295
23	rehospitali#ation?.ab,ti,kf.	9017
24	re-hospitali#ation?.ab,ti,kf.	2339
25	(hospital adj2 return?).ab,ti,kf.	540
26	unscheduled return?.ab,ti,kf.	141
27	21 or 22 or 23 or 24 or 25 or 26	62478



28	20 or 27	67430
29	exp mortality/	442171
30	Longevity/	27723
31	Life expectancy/	20249
32	Life tables/	6682
33	Vital Statistics/	5300
34	exp Survival Analysis/	347114
35	29 or 30 or 31 or 32 or 33 or 34	778133
36	mortality.ab,ti,kw.	1127117
37	mortalities.ab,ti,kw.	14339
38	death rate?.ab,ti,kw.	29068
39	case fatality rate?.ab,ti,kw.	10123
40	survival rate.ab,ti,kw.	126987
41	mean survival time.ab,ti,kw.	5575
42	life expectancy.ab,ti,kw.	43648
43	years of potential life lost.ab,ti,kw.	648
44	life table?.ab,ti,kw.	10587
45	survival.ab,ti,kw.	1324980
46	(kaplan-meier adj3 (analysis or curve? or estimate? or test? or product-limit? or method?)).ab,ti,kw.	99483
47	cox model?.ab,ti,kw.	15933
48	hazard? model?.ab,ti,kw.	61783
49	36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48	2359808
50	35 or 49	2616488
51	28 or 50	2657057
52	Appendectomy/	13327
53	appendectom*.ti,kf.	5976
54	52 or 53	14574
55	exp Cholecystectomy/	32080
56	cholecystectom*.ti,kf.	19502
57	55 or 56	35783
58	Arthroplasty, Replacement, Knee/	35892
59	(knee adj2 (replacement? or arthroplas*)).ti,kf.	35600
60	58 or 59	46030
61	exp Arthroscopy/	30535
62	arthroscop*.ti,kf.	27119



63	61 or 62	39894
64	Angioplasty, Balloon, Coronary/	36565
65	percutaneous coronary intervention/	32915
66	ptca.ti,kf.	1081
67	percutaneous transluminal coronary angioplast*.ti,kf.	2375
68	percutaneous coronary intervention?.ti,kf.	27975
69	64 or 65 or 66 or 67 or 68	77126
70	"Transurethral Resection of Prostate"/	4054
71	(transurethral adj3 (prostatectom* or thermal ablation or thermotherap*).ti,kf.	863
72	(prostate adj3 transurethral adj3 (ablation or electroresection? or electrovaporization? or resection? or vaporesction?).ti,kf.	912
73	(turp or turps or tuvp or vlap).ti,kf.	745
74	(laser adj3 ablation adj3 prostate).ti,kf.	143
75	71 or 72 or 73 or 74	2507
76	70 or 75	5530
77	exp Pulmonary Disease, Chronic Obstructive/	72647
78	COPD.ti,kf.	33283
79	chronic obstructive pulmonary disease.ti,kf.	32589
80	77 or 78 or 79	88085
81	exp Heart Failure/	160408
82	heart failure.ti,kf.	126394
83	81 or 82	193516
84	Shoulder joint/su	10038
85	Shoulder/su	2499
86	(shoulder adj5 (surgery or surgical)).ti,kf.	2570
87	84 or 85 or 86	13391
88	ethmoid sinus/su	1148
89	ethmoid bone/su	738
90	88 or 89	1812
91	ethmoidectomy*.ti,kf.	167
92	(ethmoid adj2 (surgery or excision or resect* or removal)).ti,kf.	62
93	91 or 92	223
94	90 or 93	1863
95	maxillary sinus/su	4208
96	("maxillary sinus" adj2 (surgery or lesion or resect* or excision)).ti,kf.	149



97	95 or 96	4241
98	turbينات/su	1673
99	turbinectom*.ti,kf.	210
100	(concha? adj2 (resect* or surgery or removal or excision)).ti,kf.	18
101	(turbinate? adj2 (resect* or surgery or removal or excision)).ti,kf.	183
102	conchectom*.ti,kf.	0
103	99 or 100 or 101 or 102	399
104	98 or 103	1763
105	tonsillectomy/	11321
106	Palatine Tonsil/su	1346
107	105 or 106	11701
108	tonsillectom*.ti,kf.	7314
109	(tonsil? adj3 (removal or sugery or resect* or excision)).ti,kf.	96
110	108 or 109	7389
111	107 or 110	12697
112	rhinoplasty/	11918
113	rhinoplast*.ti,kf.	5844
114	((nose or nasal) adj3 reconstruct*).ti,kf.	1583
115	113 or 114	7344
116	112 or 115	13730
117	nasal septum/su	5216
118	nasal obstruction/su	2298
119	117 or 118	6673
120	septoplast*.ti,kf.	1263
121	transfixion?.ti,kf.	114
122	(nasal septum adj2 reconstruct*).ti,kf.	10
123	rhinoseptoplast*.ti,kf.	72
124	septorhinoplast*.ti,kf.	536
125	120 or 121 or 122 or 123 or 124	1929
126	119 or 125	7437
127	myringoplasty/	1513
128	myringoplast*.ti,kf.	907
129	(tympanoplast* adj2 (type 1 or type I)).ti,kf.	264
130	128 or 129	1132
131	127 or 130	1872



132	54 or 57 or 60 or 63 or 69 or 76 or 80 or 83 or 87 or 94 or 97 or 104 or 111 or 116 or 126 or 131	542528
133	((systematic review or systematic literature review or systematic scoping review or systematic narrative review or systematic qualitative review or systematic evidence review or systematic quantitative review or systematic meta-review or systematic critical review or systematic mixed studies review or systematic mapping review or systematic cochrane review or "systematic search and review" or systematic integrative review).ti. not comment.pt. not (protocol or protocols).ti. not medline.st.) or (Cochrane Database Syst Rev.ja. and review.pt.) or systematic review.pt.	355069
134	meta-analys*.ti.	233911
135	meta-analysis.pt.	217409
136	exp Technology Assessment, Biomedical/	12751
137	health technology assessment.ti,kf.	3372
138	HtA.ti,kf.	1043
139	133 or 134 or 135 or 136 or 137 or 138	490167
140	randomized controlled trial.pt.	640712
141	controlled clinical trial.pt.	95709
142	randomized.ti,ab.	760963
143	placebo.ti,ab.	266755
144	clinical trials as topic/	205280
145	randomly.ti,ab.	463784
146	trial?.ti.	446321
147	140 or 141 or 142 or 143 or 144 or 145 or 146	1742472
148	exp animal/ not humans/	5349679
149	147 not 148	1608965
150	Epidemiologic Studies/	9683
151	exp Case-Control Studies/	1612847
152	exp Cohort Studies/	2759477
153	Cross-Sectional Studies/	547813
154	(epidemiologic adj (study or studies)).ab,ti.	30258
155	case control.ab,ti.	172684
156	(cohort adj (study or studies)).ab,ti.	400811
157	cross sectional.ab,ti.	632937
158	cohort analy\$.ab,ti.	15063
159	(follow up adj (study or studies)).ab,ti.	60549
160	longitudinal.ab,ti.	378339
161	retrospective\$.ab,ti.	1229615

162	prospective\$.ab,ti.	983030
163	(observ\$ adj3 (study or studies)).ab,ti.	342170
164	150 or 151 or 152 or 153 or 154 or 155 or 156 or 157 or 158 or 159 or 160 or 161 or 162 or 163	4716472
165	19 and 132	2635
166	51 and 165	1255
167	limit 166 to yr="2012-2025"	1052
168	139 and 167	43
169	147 and 167	90
170	164 and 167	719
171	169 or 170	759
Comments		

3.1.2 Cochrane

Date	23/06/2025 11:23:10	
Database	Cochrane	
Search strategy		
#1	[mh ^"Length of Stay"[mj]]	156
#2	"length of stay":ti	567
#3	"hospital stay":ti	471
#4	(day NEAR/3 hospital*):ti	262
#5	(duration NEAR/3 stay):ti	54
#6	(stay NEAR/2 time):ti	10
#7	"early discharge":ti	242
#8	((short* or decreas* or reduc*) NEAR/2 stay):ti	164
#9	#2 or #3 or #4 or #5 or #6 or #7 or #8	1633
#10	#1 or #9	1741
#11	(outpatient? NEAR/5 inpatient?):ti	304
#12	[mh ^"hospitalization"[mj]] and [mh ^"Ambulatory surgical procedures"[mj]]	2
#13	("day care" NEAR/3 (standard or normal or usual) NEAR/3 (care or procedure)):ti	2
#14	("day care" NEAR/3 hospitali*ation?):ti	0
#15	(hospitali*ation? NEAR/3 ambulatory):ti	11
#16	"one day surgery":ti	10
#17	"day surgery":ti	331
#18	#11 or #12 or #13 or #14 or #15 or #16 or #17	649



#19	#10 or #18	2384
#20	[mh ^"Patient readmission"]	1648
#21	readmission?:ab,ti,kw	10911
#22	re-admission?:ab,ti,kw	1114
#23	rehospitali*ation?:ab,ti,kw	3309
#24	re-hospitali*ation?:ab,ti,kw	1062
#25	(hospital NEAR/2 return?):ab,ti,kw	163
#26	unscheduled return?:ab,ti,kw	138
#27	#21 or #22 or #23 or #24 or #25 or #26	13110
#28	#20 or #27	13110
#29	[mh "mortality"]	18548
#30	[mh ^"Longevity"]	124
#31	[mh ^"Life expectancy"]	241
#32	[mh ^"Life tables"]	589
#33	[mh ^"Vital Statistics"]	5
#34	[mh "Survival Analysis"]	29459
#35	#29 or #30 or #31 or #32 or #33 or #34	44415
#36	mortality:ab,ti,kw	126812
#37	mortalities:ab,ti,kw	452
#38	death rate?:ab,ti,kw	41609
#39	case fatality rate?:ab,ti,kw	887
#40	survival rate:ab,ti,kw	67756
#41	mean survival time:ab,ti,kw	8843
#42	life expectancy:ab,ti,kw	7684
#43	years of potential life lost:ab,ti,kw	454
#44	life table?:ab,ti,kw	17584
#45	survival:ab,ti,kw	142724
#46	(kaplan-meier NEAR/3 (analysis or curve? or estimate? or test? or product-limit? or method?):ab,ti,kw	17263
#47	cox model?:ab,ti,kw	16689
#48	hazard? model?:ab,ti,kw	21243
#49	#36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48	273804
#50	#35 or #49	273966
#51	#28 or #50	281168
#52	[mh ^"Appendectomy"]	711

#53	appendectom*:ti,kw	1559
#54	#52 or #53	1559
#55	[mh "Cholecystectomy"]	2487
#56	cholecystectom*:ti,kw	6529
#57	#55 or #56	6529
#58	[mh ^"Arthroplasty, Replacement, Knee"]	4076
#59	(knee NEAR/2 (replacement? or arthroplas*)):ti,kw	9966
#60	#58 or #59	9966
#61	[mh "Arthroscopy"]	2220
#62	arthroscop*:ti,kw	5260
#63	#61 or #62	5264
#64	[mh ^"Angioplasty, Balloon, Coronary"]	4499
#65	[mh ^"percutaneous coronary intervention"]	4419
#66	ptca:ti,kw	322
#67	("percutaneous transluminal coronary" NEAR/2 angioplast*):ti,kw	266
#68	("percutaneous coronary" NEAR/2 intervention?):ti,kw	10412
#69	#64 or #65 or #66 or #67 or #68	13911
#70	[mh ^"Transurethral Resection of Prostate"]	598
#71	(transurethral NEAR/3 (prostatectom* or thermal ablation or thermotherap*)):ti,kw	275
#72	(prostate NEAR/3 transurethral NEAR/3 (ablation or electroresection? or electrovaporization? or resection? or vaporesction?)):ti,kw	883
#73	(turp or turps or tuvp or vlap):ti,kw	330
#74	(laser NEAR/3 ablation NEAR/3 prostate):ti,kw	32
#75	#71 or #72 or #73 or #74	1352
#76	#70 or #75	1352
#77	[mh "Pulmonary Disease, Chronic Obstructive"]	8079
#78	COPD:ti,kw	12049
#79	"chronic obstructive pulmonary disease":ti,kw	7319
#80	#77 or #78 or #79	19524
#81	[mh "Heart Failure"]	14864
#82	"heart failure":ti,kw	30965
#83	#81 or #82	31012
#84	[mh "Diabetes Mellitus"]	46784
#85	diabet*:ti,kw	101540
#86	#84 or #85	102286



#87	[mh ^"Shoulder joint"/SU]	440
#88	[mh ^"Shoulder"/SU]	247
#89	(shoulder NEAR/5 (surgery or surgical)):ti,kw	2262
#90	#87 or #88 or #89	2262
#91	[mh ^"ethmoid sinus"/SU]	17
#92	[mh ^"ethmoid bone"/SU]	3
#93	#91 or #92	20
#94	ethmoidectom*:ti,kw	42
#95	(ethmoid NEAR/2 (surgery or excision or resect* or removal)):ti,kw	31
#96	#94 or #95	66
#97	#93 or #96	69
#98	[mh ^"maxillary sinus"/SU]	274
#99	("maxillary sinus" NEAR/2 (surgery or lesion or resect* or excision)):ti,kw	204
#100	#98 or #99	286
#101	[mh "turbinates"/SU]	171
#102	turbinectom*:ti,kw	47
#103	(concha? NEAR/2 (resect* or surgery or removal or excision)):ti,kw	2
#104	(turbinate? NEAR/2 (resect* or surgery or removal or excision)):ti,kw	207
#105	conchectom*:ti,kw	0
#106	#102 or #103 or #104 or #105	236
#107	#101 or #106	239
#108	[mh ^"tonsillectomy"]	1286
#109	[mh ^"Palatine Tonsil"/SU]	63
#110	#108 or #109	1294
#111	tonsillectom*:ti,kw	2720
#112	(tonsil? NEAR/3 (removal or surgery or resect* or excision)):ti,kw	25
#113	#111 or #112	2742
#114	#110 or #113	2750
#115	[mh ^"rhinoplasty"]	408
#116	rhinoplast*:ti,kw	703
#117	((nose or nasal) NEAR/3 reconstruct*):ti,kw	179
#118	#116 or #117	772
#119	#115 or #118	772
#120	[mh "nasal septum"/SU]	278
#121	[mh "nasal obstruction"/SU]	175

#122	#120 or #121	390
#123	septoplast*:ti,kw	381
#124	transfixion?:ti,kw	9
#125	(nasal septum NEAR/2 reconstruct*):ti,kw	69
#126	rhinoseptoplast*:ti,kw	9
#127	septorhinoplast*:ti,kw	119
#128	#123 or #124 or #125 or #126 or #127	519
#129	#122 or #128	749
#130	[mh ^"myringoplasty"]	93
#131	myringoplast*:ti,kw	205
#132	(tympanoplast* NEAR/2 (type 1 or type I)):ti,kw	63
#133	#131 or #132	246
#134	#130 or #133	246
#135	#54 or #57 or #60 or #63 or #69 or #76 or #80 or #83 or #86 or #90 or #97 or #100 or #107 or #114 or #119 or #129 or #134	190436
#136	#19 and #135	296
#137	#51 and #136	108
#138	#137 with Cochrane Library publication date Between Jan 2012 and Dec 2025, in Cochrane Reviews	3
#139	#137 with Publication Year from 2012 to 2025, in Trials	81
Comments		

3.1.3 Embase

Date	23 Jun 2025	
Database	Embase	
Search strategy		
#1	'length of stay'/mj	17017
#2	'early discharge'/mj	10
#3	'length of stay':ti,kw	17364
#4	'hospital stay':ti,kw	6177
#5	(day NEAR/3 hospital*):ti,kw	4197
#6	(duration NEAR/3 stay):ti,kw	476
#7	(stay NEAR/2 time):ti,kw	88
#8	'early discharge':ti,kw	1709
#9	((short* OR decreas* OR reduc*) NEAR/2 stay):ti,kw	1636
#10	#2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9	30005



#11	#1 OR #10	34505
#12	(outpatient\$ NEAR/5 inpatient\$):ti,kw	2803
#13	'hospitalization'/mj AND 'ambulatory surgical procedures'/mj	80
#14	('day care' NEAR/3 (standard OR normal OR usual) NEAR/3 (care OR procedure)):ti,kw	3
#15	('day care' NEAR/3 hospitali?ation\$):ti,kw	7
#16	(hospitali?ation\$ NEAR/3 ambulatory):ti,kw	285
#17	'one day surgery':ti,kw	165
#18	'day surgery':ti,kw	2368
#19	'day surgery'/de	21440
#20	#12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19	24955
#21	#11 OR #20	58940
#22	'hospital readmission'/de	123184
#23	readmission:ab,ti,kw OR readmission?:ab,ti,kw	99394
#24	readmission:ab,ti,kw OR readmission?:ab,ti,kw	99394
#25	rehospitali?ation:ab,ti,kw OR rehospitali?ation?:ab,ti,kw	20894
#26	rehospitali?ation:ab,ti,kw OR rehospitali?ation?:ab,ti,kw	20894
#27	(hospital NEAR/2 return\$):ab,ti,kw	974
#28	(unscheduled NEXT/1 return\$):ab,ti,kw	211
#29	#23 OR #24 OR #25 OR #26 OR #27 OR #28	117115
#30	#22 OR #29	147983
#31	'mortality'/exp	1598017
#32	'longevity'/de	40166
#33	'life expectancy'/exp	71189
#34	'life table'/de	5419
#35	'vital statistics'/de	7475
#36	'survival analysis'/de	68187
#37	#31 OR #32 OR #33 OR #34 OR #35 OR #36	1739646
#38	mortality:ab,ti,kw	1716630
#39	mortalities:ab,ti,kw	20275
#40	'death rate':ab,ti,kw OR 'death rate?':ab,ti,kw	38654
#41	'case fatality rate':ab,ti,kw OR 'case fatality rate?':ab,ti,kw	12512
#42	'survival rate':ab,ti,kw	184900
#43	'mean survival time':ab,ti,kw	7893
#44	'life expectancy':ab,ti,kw	66309
#45	'years of potential life lost':ab,ti,kw	783

#46	'life table':ab,ti,kw OR 'life table?':ab,ti,kw	12600
#47	survival:ab,ti,kw	2025780
#48	('kaplan-meier' NEAR/3 (analysis OR curve\$ OR estimate\$ OR test\$ OR 'product-limit\$' OR method\$)):ab,ti,kw	188748
#49	'cox model':ab,ti,kw OR 'cox model?':ab,ti,kw	29080
#50	'hazard model':ab,ti,kw OR 'hazard model?':ab,ti,kw OR 'hazard? model':ab,ti,kw OR 'hazard? model?':ab,ti,kw	101412
#51	#38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50	3574381
#52	#37 OR #51	4046794
#53	#30 OR #52	4130842
#54	'appendectomy'/exp	31617
#55	appendectom*:ti,kw	7540
#56	#54 OR #55	32036
#57	'cholecystectomy'/exp	71762
#58	cholecystectom*:ti,kw	27175
#59	#57 OR #58	72909
#60	'knee replacement'/exp	52670
#61	(knee NEAR/2 (replacement\$ OR arthroplas*)):ti,kw	43412
#62	#60 OR #61	62066
#63	'arthroscopy'/exp	58908
#64	arthroscop*:ti,kw	33815
#65	#63 OR #64	62936
#66	'transluminal coronary angioplasty'/de	30611
#67	'percutaneous coronary intervention'/de	119412
#68	ptca:ti,kw	2073
#69	'percutaneous transluminal coronary angioplast*':ti,kw	3319
#70	'percutaneous coronary intervention':ti,kw OR 'percutaneous coronary intervention?':ti,kw	46143
#71	#66 OR #67 OR #68 OR #69 OR #70	151120
#72	'transurethral resection'/exp	26613
#73	(transurethral NEAR/3 (prostatectom* OR 'thermal ablation' OR thermotherapy OR thermotherap*)):ti,kw	1087
#74	(prostate NEAR/3 transurethral NEAR/3 (ablation OR electroresection\$ OR electrovaporization\$ OR resection\$ OR vaporesection\$)):ti,kw	4120
#75	turp:ti,kw OR turps:ti,kw OR tuvp:ti,kw OR vlap:ti,kw	1860
#76	(laser NEAR/3 ablation NEAR/3 prostate):ti,kw	241
#77	#73 OR #74 OR #75 OR #76	6357



#78	#72 OR #77	28290
#79	'chronic obstructive lung disease'/de	210842
#80	copd:ti,kw	65139
#81	'chronic obstructive pulmonary disease':ti,kw	49932
#82	#79 OR #80 OR #81	220310
#83	'heart failure'/exp	771595
#84	'heart failure':ti,kw	204831
#85	#83 OR #84	784893
#86	'diabetes mellitus'/exp	1473402
#87	diabet*:ti,kw	755261
#88	#86 OR #87	1526162
#89	'shoulder joint'/dm_su	0
#90	'shoulder'/dm_su	1611
#91	(shoulder NEAR/5 (surgery OR surgical)):ti,kw	3108
#92	#89 OR #90 OR #91	4572
#93	'ethmoid sinus'/dm_su	275
#94	'ethmoid bone'/dm_su	214
#95	#93 OR #94	479
#96	ethmoidectom*:ti,kw	236
#97	(ethmoid NEAR/2 (surgery OR excision OR resect* OR removal)):ti,kw	58
#98	#96 OR #97	291
#99	#95 OR #98	724
#100	'maxillary sinus'/exp/dm_su	1739
#101	('maxillary sinus' NEAR/2 (surgery OR lesion OR resect* OR excision)):ti,kw	149
#102	#100 OR #101	1854
#103	'turbinates'/dm_su	298
#104	'turbinectomy'/de	329
#105	#103 OR #104	627
#106	turbinectom*:ti,kw	279
#107	(concha\$ NEAR/2 (resect* OR surgery OR removal OR excision)):ti,kw	23
#108	(turbinate\$ NEAR/2 (resect* OR surgery OR removal OR excision)):ti,kw	213
#109	conchectom*:ti,kw	0
#110	#106 OR #107 OR #108 OR #109	497
#111	#105 OR #110	989
#112	'tonsillectomy'/exp	21728

#113	tonsillectom*:ti,kw	8749
#114	(tonsil\$ NEAR/3 (removal OR sugery OR resect* OR excision)):ti,kw	71
#115	#113 OR #114	8809
#116	#112 OR #115	22400
#117	'rhinoplasty'/de	14441
#118	rhinoplast*:ti,kw	6336
#119	((nose OR nasal) NEAR/3 reconstruct*):ti,kw	1816
#120	#118 OR #119	8037
#121	#117 OR #120	15577
#122	'septoplasty'/de	4494
#123	'nose surgery'/de	7161
#124	'nose septum'/dm_su	1125
#125	'nose obstruction'/dm_su	1970
#126	#122 OR #123 OR #124 OR #125	13261
#127	septoplast*:ti,kw	1654
#128	transfixion:ti,kw OR transfixion?:ti,kw	120
#129	('nasal septum' NEAR/2 reconstruct*):ti,kw	12
#130	rhinoseptoplast*:ti,kw	91
#131	septorhinoplast*:ti,kw	660
#132	#127 OR #128 OR #129 OR #130 OR #131	2444
#133	#126 OR #132	13832
#134	'myringoplasty'/de	2043
#135	myringoplast*:ti,kw	1126
#136	(tympanoplast* NEAR/2 ('type 1' OR 'type i')):ti,kw	306
#137	#135 OR #136	1381
#138	#134 OR #137	2340
#139	#56 OR #59 OR #62 OR #65 OR #71 OR #78 OR #82 OR #85 OR #88 OR #92 OR #99 OR #102 OR #111 OR #116 OR #121 OR #133 OR #138	2772536
#140	#21 AND #139	9526
#141	#53 AND #140	4198
#142	#141 AND [2012-2025]/py	3668
#143	#142 NOT [medline]/lim	1543
#144	#143 NOT ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	509
#145	#144 AND ('meta-analysis'/exp OR 'meta-analysis' OR 'systematic review'/exp OR 'systematic review')	34



#146	#144 AND (random*:ab,ti OR placebo*:de,ab,ti OR ((double NEXT/1 blind*):ab,ti))	77
#147	'controlled study'/exp	11793739
#148	'cohort analysis'/de	1390039
#149	'cross-sectional study'/de	737810
#150	'epidemiology'/de	328228
#151	#147 OR #148 OR #149 OR #150	13057063
#152	(epidemiologic NEAR/2 (study OR studies)):ab,ti	39916
#153	'case control':ab,ti	230068
#154	(cohort NEAR/2 (study OR studies)):ab,ti	634588
#155	'cross sectional':ab,ti	823664
#156	'cohort analy':ab,ti OR 'cohort analy?':ab,ti	1
#157	('follow up' NEAR/2 (study OR studies)):ab,ti	109710
#158	longitudinal:ab,ti	520330
#159	retrospective:ab,ti OR retrospective?:ab,ti	1510050
#160	prospective:ab,ti OR prospective?:ab,ti	1330613
#161	(observ\$ NEAR/3 (study OR studies)):ab,ti	11626
#162	#152 OR #153 OR #154 OR #155 OR #156 OR #157 OR #158 OR #159 OR #160 OR #161	4289861
#163	#151 OR #162	14737226
#164	#144 AND #163	500
#165	#146 OR #164	507
#166	#145 OR #165	522
#167	#144 NOT #166	116
Comments		

3.2 Results

Table 11 – Selection process of literature in different categories

<i>Procedure or medical condition</i>	<i>Selected for full text evaluation (SR + primary studies)</i>	<i>Excluded (n)</i>	<i>Included selection from (SR + primary studies)</i>	<i>Manually added</i>	<i>Total included (SR + primary studies)</i>
<i>THA/TKA</i>	39 (1+38) update 7 (1+6)	20 (0+20) update 5 (0+5)	19 (1+18) update 2 (1+1)	1 (0+1)	20 (1+19) update 2 (1+1)
<i>PCI</i>	25 (6+19)	16 (1+15)	9 (5+4)	0	9 (5+4)
<i>Heart failure</i>	17 (0+17) update 3 (0+3)	4 (0+4) update 2 (0+2)	13 (0+13) update 1 (0+1)	1 (0+1)	14 (0+14) update 1 (0+1)
<i>Appendectomy</i>	6 (2+4)	4 (1+3)	2 (1+1)	0	2 (1+1)
<i>Laparoscopic cholecystectomy</i>	5 (3+2)	2 (0+2)	3 (3+0)	0	3 (3+0)
<i>COPD</i>	3 (0+3)	1 (0+1)	2 (0+2)	0	2 (0+2)
<i>diabetes</i>	2 (0+2)	2 (0+2)	0	0	0
<i>ENT</i>	1 (0+1)	1 (0+1)	0	0	0
<i>TURP</i>	1 (0+1)	1 (0+1)	0	0	0
<i>miscellaneous</i>	7 (1+6)	4 (1+3)	3 (0+3)	0	3 (0+3)*
<i>Total</i>	116 (14+102)	61 (3+58)	54 (11+43)	2 (0+2)	56 (11+45)

COPD chronic obstructive pulmonary disease, *ENT* ear nose throat, *PCI* percutaneous coronary intervention, *SR* systematic review, *THA* total hip arthroplasty, *TKA* total knee arthroplasty, *TURP* transurethral prostatectomy



Table 12 – List of excluded papers

Category	First author	Year	Reference	Title	Reason for exclusion
<i>Hip and knee arthroplasty</i>	Bovonratwet	2017	¹	Comparison of Outpatient vs Inpatient Total Knee Arthroplasty: An ACS-NSQIP Analysis	Primary study dating back from before most recent selected systematic review (included) ²
	Bovonratwet	2017	³	Outpatient and Inpatient Unicompartmental Knee Arthroplasty Procedures Have Similar Short-Term Complication Profiles	Primary study dating back from before most recent selected systematic review ²
	Gillis	2019	⁴	Defining growth potential and barriers to same day discharge total knee arthroplasty	Primary study dating back from before most recent selected systematic review ²
	Huang	2017	⁵	Cost savings of outpatient versus standard inpatient total knee arthroplasty	Primary study dating back from before most recent selected systematic review ²
	Kiskaddon	2018	⁶	Hospital Discharge Within 1 Day After Total Joint Arthroplasty From a Veterans Affairs Hospital Does Not Increase Complication and Readmission Rates	Primary study dating back from before most recent selected systematic review ²
	Liu	2019	⁷	Association between same day discharge total knee and total hip arthroplasty and risks of cardiac/pulmonary complications and readmission: a population-based observational study	Primary study dating back from before most recent selected systematic review ²
	Nowak	2019	⁸	Same-day and delayed hospital discharge are associated with worse outcomes following total knee arthroplasty	Primary study dating back from before most recent selected systematic review ²
	Richter	2017	⁹	Cost Comparison of Outpatient Versus Inpatient Unicompartmental Knee Arthroplasty	Primary study dating back from before most recent selected systematic review ²
	Springer	2017	¹⁰	Impact of Inpatient Versus Outpatient Total Joint Arthroplasty on 30-Day Hospital Readmission Rates and Unplanned Episodes of Care	Primary study dating back from before most recent selected systematic review (included) ²

	Barad	2018	¹¹	Is a shortened length of stay and increased rate of discharge to home associated with a low readmission rate and cost-effectiveness after primary total knee arthroplasty?	Single centre study
	Cherry	2021	¹²	Converting hip and knee arthroplasty cases to same-day surgery due to COVID-19	Single centre study
	Kelmer	2021	¹³	Same-Day vs One-Day Discharge: Rates and Reasons for Emergency Department Return After Hospital-Based Total Joint Arthroplasty	Single centre study
	Lands	2021	¹⁴	Outpatient total hip and knee arthroplasty exhibit similar early complication rates to inpatient procedures	Single centre study
	Littleton	2020	¹⁵	A matched-cohort study comparing outpatient total knee arthroplasty in an ambulatory surgery centre with inpatient total knee arthroplasty in a hospital	Single centre study
	Mitchell	2023	¹⁶	An Increase in Same-day Discharge After Total Joint Arthroplasty During the COVID-19 Pandemic Does Not Influence Patient Outcomes: A Retrospective Cohort Analysis	Single centre study
	Singh	2022	¹⁷	Comparative Analysis of Outcomes in Medicare-Eligible Patients with a Hospital Stay Less than Two-Midnights versus Longer Length of Stay following Total Knee Arthroplasty: Implications for Inpatient-Outpatient Designation	Single centre study
	Stone	2018	¹⁸	Reducing Length of Stay Does Not Increase Emergency Room Visits or Readmissions in Patients Undergoing Primary Hip and Knee Arthroplasties	Single centre study
	Williams	2017	¹⁹	The Association Between Hospital Length of Stay and 90-Day Readmission Risk Within a Total Joint Arthroplasty Bundled Payment Initiative	Single centre study



	Hernandez	2020	²⁰	Same-day Bilateral Total Knee Arthroplasty Did Not Increase 90-day Hospital Returns	Wrong comparison: same day bilateral versus staged TKA
	Sloan	2018	²¹	Length of stay and inpatient mortality trends in primary and revision total joint arthroplasty in the United States, 2000–2014	Wrong outcome: inpatient mortality
	Brennan	2024	²²	Same-day discharge does not increase resource utilization within one year of total joint arthroplasty.	Single centre study
	Jenny	2024	²³	Complication Rates Are Not Higher After Outpatient Versus Inpatient Fast-Track Total Knee Arthroplasty: A Propensity-Matched Prospective Comparative Study	Wrong outcome: 90d complication rate with readmission
	Puri	2025	²⁴	Assessment of 90-Day Outcomes Following Total Joint Arthroplasty in Ambulatory Surgery Centers, Hospital Outpatient Departments, and Hospitals: A Michigan Arthroplasty Registry Collaborative Quality Initiative Analysis	Wrong comparison: ambulatory surgery centres versus hospital outpatient departments and hospitals
	Rele	2025	²⁵	Clinical and cost-effectiveness of earlier discharge from acute hospital after total joint arthroplasty	Single centre study
	Sanchez-Mele	2025	²⁶	Is early discharge following primary total knee arthroplasty a risk factor for the development of complications, readmissions and unscheduled consultations?	Single centre study
PCI	Sharkawi	2019	²⁷	Current perspectives on location of monitoring and length of stay following PPCI for ST elevation myocardial infarction	Wrong publication type: narrative review
	Clavijo	2016	²⁸	Same-day discharge after coronary stenting and femoral artery device closure: A randomized study in stable and low-risk acute coronary syndrome patients	Primary study dating back from before most recent selected systematic review (included) ²⁹

	Melberg	2015	³⁰	Safety and health status following early discharge in patients with acute myocardial infarction treated with primary PCI: a randomized trial	Primary study dating back from before most recent selected systematic review (included) ³¹
	Noman	2013	³²	Early discharge after primary percutaneous coronary intervention for ST-elevation myocardial infarction	Primary study dating back from before most recent selected systematic review (included) ³¹
	Novobilsky	2019	³³	Safety of early discharge in low risk patients after acute ST-segment elevation myocardial infarction, treated with primary percutaneous coronary intervention. Open label, randomized trial	Primary study dating back from before most recent selected systematic review (included) ³¹
	Satilmisoglu	2016	³⁴	Safety of Early Discharge After Primary Percutaneous Coronary Intervention	Primary study dating back from before most recent selected systematic review (included) ³¹
	Swaminathan	2015	³⁵	Hospital length of stay and clinical outcomes in older STEMI patients after primary PCI: a report from the National Cardiovascular Data Registry	Primary study dating back from before most recent selected systematic review (included) ³¹
	Agarwal	2015	³⁶	Length of stay and long-term mortality following ST elevation myocardial infarction	Primary study dating back from before most recent selected systematic review ³¹
	Novobilsky	2016	³⁷	Early discharge (48-72 hours) after acute ST-segment elevation myocardial infarction: interim results of the open, randomized, monocentric study	Primary study dating back from before most recent selected systematic review ³¹
	Ohlmeier	2014	³⁸	Evaluating methods for intersectoral comparison of quality of care. A routine data analysis of elective percutaneous coronary interventions	Primary study dating back from before most recent selected systematic review ²⁹
	Orn	2013	³⁹	Early discharge (<3 days) following primary PCI is safe in low risk patients	Wrong publication type: conference abstract
	Bawamia	2023	⁴⁰	Very Early Discharge After Primary Percutaneous Coronary Intervention	Single centre study



				for ST-Elevation Myocardial Infarction: Mortality Outcomes at Six Months	
	Dionisio	2022	41	Early Hospital Discharge (Within Six Hours) for Patients Undergoing Coronary Angioplasty	Single centre study
	Rehmat	2020	42	Safety of Early Discharge after Primary Angioplasty	Single centre study
	Rodriguez-Araujo	2018	43	Same versus next day discharge after elective transradial PCI: The RADial Same Day Discharge after PCI trial. (The RASADDA-PCI trial)	Single centre study
	Bhat	2022	44	Hospitalization Duration for Acute Myocardial Infarction: A Temporal Analysis of 18-Year United States Data	Wrong population
Heart failure	Minana	2017	45	Length of stay and risk of very early readmission in acute heart failure	Single centre study
	Namvar	2023	46	Association between the Length of Hospital Stay and 30-Day Outcomes in Patients Admitted with Acute Decompensated Heart Failure	Single centre study
	Loop	2016	47	Comparison of Length of Stay, 30-Day Mortality, and 30-Day Readmission Rates in Medicare Patients With Heart Failure and With Reduced Versus Preserved Ejection Fraction	Wrong comparison: ejection fraction preserved or reduced
	Mentz	2014	48	International differences in clinical characteristics, management, and outcomes in acute heart failure patients: better short-term outcomes in patients enrolled in Eastern Europe and Russia in the PROTECT trial	Wrong comparison between regions
	Drye (mixed)	2012	49	Comparison of hospital risk-standardized mortality rates calculated by using in-hospital and 30-day models: an observational study with implications for hospital profiling	Wrong outcome: hospital risk-standardized mortality rates

	Ranasnighe	2024	50	Early discharge to clinic-based therapy of patients presenting with decompensated heart failure (EDICT-HF)	Wrong publication type: study protocol not including results
	Zaprutko	2017	51	Hospitalisation length and prognosis in heart failure patients.	Wrong outcome: 1 year mortality
Appendectomy	Cosse	2014	52	Day case appendectomy in adults: A review	Wrong comparison: No comparative data
	Cross	2013	53	Laparoscopic appendectomy for acute appendicitis: a safe same-day surgery procedure?	Primary study dating back from before most recent selected systematic review ⁵⁴
	Lee	2014	55	Feasibility of the short hospital stays after laparoscopic appendectomy for uncomplicated appendicitis	Single centre study
	Rochon	2019	56	Expedited discharge in uncomplicated acute appendicitis: Decreasing the length of stay while maintaining quality	Single centre study
Laparoscopic cholecystectomy	Lezana Pérez	2013	57	Comparative study of ambulatory laparoscopic cholecystectomy versus management of laparoscopic cholecystectomy with conventional hospital stay	Primary study dating back from before most recent selected systematic review (included) ⁵⁸
	Durantez	2013	59	Day surgery laparoscopic cholecystectomy: comparative analysis in two consecutive periods in a of 1132 patients	Single centre study
COPD	Rezaee	2018	60	Examining 30-day COPD readmissions through the emergency department	Wrong population: patients presenting to ED 30-day after index admission
Diabetes	Benaiges	2014	61	Efficacy of treatment for hyperglycemic crisis in elderly diabetic patients in a day hospital	Single centre study
	Tang	2014	62	How well do we need to control blood glucose before discharging DKA patients? A retrospective study	Single centre study



ENT	Belleudy	2021	⁶³	Assessment of quality and safety in rhinologic day surgery	Single centre study
TURP	Lavan	2018	⁶⁴	Day-case surgery is possible in the majority of men undergoing transurethral resection of the prostate – a report on over 1000 cases	Single centre study
Miscellaneous	Fisher	2014	⁶⁵	Is day surgery safe? A systematic literature review	Wrong publication type, narrative review
	Agarwal	2018	⁶⁶	Utility of index hospitalisation characteristics in predicting 30-day hospital readmission in the United States	Wrong publication type, conference abstract
	Han	2014	⁶⁷	Descriptive analysis of 30-day readmission after inpatient surgery discharge in the Veterans Health Administration	Wrong population: no results on individual selected procedures

COPD chronic obstructive pulmonary disease, ENT ear nose and throat, PCI percutaneous coronary intervention, THA total hip arthroplasty, TKA total knee arthroplasty, TURP transurethral prostatectomy

Table 13 – Characteristics and results of systematic reviews on PCI

Reference	Population	Intervention and comparator	Outcome of interest	Meta-analysis	Impact
Asad 2020³¹	PCI Low risk STEMI patients*	Early discharge ≤3d vs Late discharge >3d	Readmission <i>between 30 days and 6 months</i>	6 RCT (of 7) n=1565	RR 0.76 (95%CI: 0.48-1.2), p=0.23, I ² =0%
				2 cohort (of 4) n=36 573	RR 0.89 (95%CI : 0.64-1.24), p=0.51, I ² =59% unadjusted results
			Mortality <i>between 30 days and 1 year</i>	6 RCT (of 7) n=1724	RR 0.97 (95%CI : 0.23-4.05), p=0.97, I ² =0%
				3 cohort (of 4) n=36 635	RR 0.40 (95%CI: 0.23-0.71), p= 0.002, I ² =44% unadjusted results
Gong	Primary PCI	Early discharge <3d	30-day readmission	3 RCT(of 5) n=1004	OR 0.64 (95%CI : 0.35-1.16), p= 0.47, I ² =0%

2018⁶⁸	Low risk STEMI patients	vs conventional discharge	30-day mortality	3 RCT (of 5) n=1004	OR 0.65 (95%CI: 0.11-3.93) (2 studies with no events, p= 0.64, I ² not applicable)
Abdelnoor 2017⁶⁹	PCI Stable CAD, UAP or NSTEMI (8 studies) OR STEMI (4 studies)	SDD vs ordinary discharge OR Discharge 48-72h vs ordinary discharge	30-day readmission	12 RCT n= 2962 meta-regression	RR 1.10 (95%CI: 0.88-1.38), p=0.37, I ² =16% STEMI z-score 2.81, p=0.005 NSTEMI, UAP z-score 3.28, p=0.0010 Stable AP z-score -3.25, p=0.008
Bundhun 2017²⁹	PCI Stable CAD (but not exclusive)	SDD vs ON	30-day readmission	3 RCT (of 8) n=1205	OR 1.53 (95%CI : 0.88-2.65), p=0.13, I ² = 0%
			30-day mortality	3 RCT (of 8) n=2449	OR 0.22 (95%CI: 0.04-1.35), p=0.1, I ² =0%
Abdelaal 2013⁷⁰	PCI Uncomplicated	SDD vs ON	30-day readmissions	5 RCT (of 5) n=2039	OR 1.1 (95%CI: 0.7-1.74), p=0.67, I ² =0%
				5 observational (of 8) n=105 827	OR 0.62 (95%CI: 0.1-3.98), p= 0.09, I ² =58% unadjusted results
				Total	OR 1.01 (95%CI: 0.79-1.29), p=0.37, I ² =7%

AP angina pectoris, CAD coronary artery disease, CI confidence interval, d day, h hours, n number, NSTEMI non-ST-elevation myocardial infarction, ON overnight stay, OR odds ratio, p probability, PCI percutaneous coronary intervention, RCT randomized controlled trial, SDD same day discharge, RR risk ratio, STEMI ST-elevation myocardial infarction, UAP unstable angina pectoris, vs versus.

*low risk patients: uneventful first 24 h of hospital stay, single epicardial culprit vessel, ≤2 coronary artery disease, Zwolle risk score ≤ 3, ejection fraction ≥ 40% and age < 75 years.



Table 14 – AMSTAR-2 evaluation of systematic reviews on PCI

		Asad 2020 ³¹	Gong 2018 ⁶⁸	Abdelnoor 2017 ⁶⁹	Bundun 2017 ²⁹	Abdelaal 2013 ⁷⁰	
1	Research question and inclusion criteria include components of PICO	yes	yes	yes	yes	yes	5/5
2	Explicit statement on protocol prior to conduct of review	no	no	no	no	no	0/5
3	Explain selection study design (RCT and/or observational)	yes	no	no	no	no	1/5
4	Comprehensive literature search strategy	yes	yes	yes	yes	yes	5/5
5	Study selection in duplicate	yes	yes	no	yes	yes	4/5
6	Data extraction in duplicate	no	yes	no	yes	yes	3/5
7	List of excluded studies	no	no	no	no	no	0/5
8	Details included studies	partial yes	partial yes	partial yes	partial yes	partial yes	5/5
9	Satisfactory technique to assess Risk of Bias included studies	yes	yes	no	yes	no	3/5
10	Source of funding included studies	no	no	no	no	no	0/5
11	Appropriate methods for statistical combination of results (meta-analysis)	yes for RCT, no for NRSI	yes	yes	yes	yes for RCT no for NRSI	3/5
12	Assess potential impact of risk of bias individual studies on the results of meta-analysis	yes	yes	yes	no	no	3/5
13	Account for risk of bias individual studies when interpreting/discussing results of the review	yes	no	yes	no	no	2/5
14	Satisfactory explanation for heterogeneity observed	no	no	yes	yes	yes	3/5
15	Adequate investigation of publication bias	no	no	no	yes	yes	2/5
16	Report potential sources of conflict of interest including funding	no	yes	partial yes	yes	yes	4/5
	Number of items with yes or partial yes	8	9	8	10	8	

RCT randomised controlled trial, NRSI non randomized studies of interventions

Table 15 – Included primary studies in systematic reviews on PCI

Primary studies	FU time	Type	Asad 2020			Gong 2018			Abdelnoor 2017		Bundun 2017			Abdelaal 2013	
			SR	Readmission	Mortality	SR	Readmission	Mortality	SR	Readmission	SR	Readmission	Mortality	SR	Readmission
<i>Azzalini 2015</i> ⁷¹	3 months	RCT	x	x	x	x	-	-	x	x	-	-	-	-	-
<i>Melberg 2015</i> ³⁰	30 days	RCT	x	-	x	x	x	x	x	x	-	-	-	-	-
<i>Kotowycz 2010</i> ⁷²	6 weeks	RCT	x	x	x	-	-	-	x	x	-	-	-	-	-
<i>Jirmar 2008</i> ⁷³	30 days	RCT	x	x	-	x	x	x	x	x	-	-	-	-	-
<i>Grines 1998</i> ⁷⁴	6 months	RCT	x	x	x	x	-	-	-	-	-	-	-	-	-
<i>Satilmisoglu 2016</i> ³⁴	30 days	RCT	x	x	x	x	x	x	-	-	-	-	-	-	-
<i>Novobilsky 2018</i> ³³	90 days	RCT	x	x	x	-	-	-	-	-	-	-	-	-	-
<i>Karabulut 2011</i> ⁷⁵	1 year	Obs	x	-	x	-	-	-	-	-	-	-	-	-	-
<i>Noman 2013</i> ³²	30 days	Obs	x	-	x	-	-	-	-	-	-	-	-	-	-
<i>Jones 2012</i> ⁷⁶	30 days	Obs	x	x	-	-	-	-	-	-	-	-	-	-	-
<i>Swaminathan 2015</i> ³⁵	30 days	Obs	x	x	x	-	-	-	-	-	-	-	-	-	-
<i>Bertrand 2006</i> ⁷⁷	30 days	RCT	-	-	-	-	-	-	x	x	x	x	x	x	x
<i>Heyde 2007</i> ⁷⁸	30 days	RCT	-	-	-	-	-	-	x	x	x	-	x	x	x
<i>Falcone 2011</i> ⁷⁹	30 days	RCT	-	-	-	-	-	-	x	x	x	-	-	x	x
<i>Carere 2000</i> ⁸⁰	30 days	RCT	-	-	-	-	-	-	x	x	x	-	-	x	x
<i>Knoph 1999</i> ⁸¹	30 days	RCT	-	-	-	-	-	-	x	x	x	-	-	x	x
<i>Kim 2013</i> ⁸²	30 days	RCT	-	-	-	-	-	-	x	x	x	x	-	-	-



Clavijo 2016 ²⁸	30 days	RCT	-	-	-	-	-	-	-	-	x	x	-	-	-
Slagboom 2005 ⁸³	30 days	RCT/obs	-	-	-	-	-	-	-	-	x	-	x	x	-
Dalby 2003 ⁸⁴	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	x
Yee 2004 ⁸⁵	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	x
Khater 2007 ⁸⁶	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	x
Rao 2011 ⁸⁷	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	x
Slagboom 2001 ⁸⁸	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	x
Koch 2000 ⁸⁹	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	-
Chung 2010 ⁹⁰	30 days	Obs	-	-	-	-	-	-	-	-	-	-	-	x	-

Obs observational, RCT randomized controlled trial, SR systematic review. For all primary studies was indicated with x if they were included in the systematic review and/or in meta-analysis for the outcome readmission and the outcome mortality.

Table 16 – Characteristics and results of primary studies on PCI

Reference	Setting and design	Population	Intervention and comparator	Outcomes
Bradley 2021⁹¹	US 7/2009-12/2017 NCDR CathPCI registry 1716 hospitals Sequential cross-sectional cohort Logistic regression including patient-level covariates with generalized estimating equations.	Elective PCI with stent, LoS ≤1 night and discharged alive n=819 901 n= 212 369 with linked data Medicare part A for mortality average age 66y 72% male 88% white	SDD n=114 461 (14%) 65.7y (SD 10.4), 24.6% female vs ON stay n=704 630 (86%) 66.2y (SD 10.7), 28.8% female SDD increased from 4.5% in 2009 to 28.6% in 2017 (proportion of patients) Hospital level median SDD 1.5% (0.0-4.7) in 2009 to 15.4% (4.5-41) in 2017	30-day mortality SDD n=36 and ON n=463 aOR 1.03 (95%CI: 0.73-1.46), p=0.86 interaction SDD x year p=0.88 30-day readmission n= 11,977 (SDD n=806 and ON n= 11,171) 2009-2010: aOR 1.69 (95%CI: 1.40-2.03), 2015-2017: no value available Temporal trend 30-day readmission SDD 8.6% in 2009 to 3% in 2014(faster) ON 6.2% in 2009 to 4.2% in 2014 interaction SDD x year p<0.001(adjusted)
Gaba 2021⁹²	International 15 countries (Argentina, Brazil, Canada, France, Germany, Hungary Italia, Latvia, Netherlands, Poland, South Korea, Spain, Switzerland, UK, US) 29/9/2010-6/3/2014 Post-hoc analysis on RCT data EXCEL-trial Multivariable logistic regression including patient-level covariates	LMCAD and PCI Low or intermediate SYNTAX score n=935	Outpatient n=100 median LoS 1d (IQR 1;1) 67.8y (SD 8.9), 23% female vs Inpatient n=835 median LoS 2d (IQR 1;3) 65.8y (SD 9.6, 24% female)	30-day all-cause mortality = cardiac mortality Outpatient n=0 (0%) Inpatient n=9 (1%)



Liew 2020 93	Australia 2014-2017 Victorian Cardiac outcomes registry 30 hospitals Retrospective cohort Propensity score matching patient-level covariates	uncomplicated elective PCI, discharged alive n=18 101	SDD n= 586 median LoS 0 64.2y (SD 11.1), 20.8% female vs Inpatients ON n= 17 515 median LoS 1d (IQR 1;2) 67.9y (SD 10.8), 23.1% female	30-day readmission SDD n=56 (9.6%) ON n=2 033 (11.6 %), p=0.173 coefficient -0.8 (95%CI: 1.68-3.29) ^a
Ricciardi 2012 94	US 1997-2006 NHLBI sponsored Dynamic registry prospective cohort	PCI 1997-1998 n=2524 1999 n=2105 2001-2002 n=2047 2004 n=2112 2006 n=2117 N total=10 965	LoS trend 1997-1998 2.6d 1999 2.4d 2001-2002 2.2d 2004 2.0d 2006 1.9d p<0.001	30-day non-elective cardiac readmission 1997-1998 4.5% 1999 4.4% 2001-2002 4.1% 2004 5.9% 2006 4.1% Trend p=0.09 Overall 4.6% (95%CI: 3.5-5.7)

AFIC-NIHD Armed Forces Institute of Cardiology & National Institute of Heart Diseases, aOR adjusted odds ratio, BMI body mass index, CI confidence interval, GFR glomerular filtration rate, HF heart failure, IQR interquartile range, LM left main, LMCAD left main coronary artery disease, LoS length of stay, n number, NHLBI National heart lung and blood institute, NYHA New York heart association, ON overnight stay, p probability, PCI percutaneous coronary intervention, SD standard deviation, SDD same day discharge, STEMI ST-segment elevation myocardial infarction, SYNTAX synergy between PCI with taxus and cardiac surgery scores, TIMI thrombolysis In myocardial infarction, US United States of America, y year.

^a This confidence interval was taken from the original paper, but does not contain the coefficient itself. We presume this is a mistake in the paper.

Figure 1 – Risk of Bias evaluation by ROBINS-I for primary studies on PCI

		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Bradley 2021								
	Gaba 2021								
	Liew 2020								
	Ricchiardi 2012								

Domains:

D1: Bias due to confounding.

D2: Bias due to selection of participants.

D3: Bias in classification of interventions.

D4: Bias due to deviations from intended interventions.

D5: Bias due to missing data.

D6: Bias in measurement of outcomes.

D7: Bias in selection of the reported result.

Judgement

 Serious

 Moderate

 Low

<https://www.riskofbias.info/welcome/robvis-visualization-tool>



Table 17 – Characteristics and results of systematic reviews on laparoscopic cholecystectomy

Reference	Population	Intervention and comparator	Outcome of interest	Meta-analysis	Impact
Hao 2017⁵⁸	Laparaoscopic cholecystectomy	Day-surgery vs Overnight stay	Readmission	8 RCT, n=624	Peto OR 0.68 (95%CI: 0.23-2.05), p=0.5, I ² =0
			Mortality	1 RCT, n=86	Not estimable (no events)
			Consultation rate	6 RCT, n= 493	Peto OR 1.13 (95%CI: 0.49-2.59), p=0.77, I ² =22%
			Costs	No, 4 RCT, n=391	3.8% to 372.6% higher for outpatients
Tang 2015⁹⁵	Laparaoscopic cholecystectomy	Day-surgery vs Overnight stay (no inpatients)	Readmission	6 RCT (of 7) + 3 CCT (of 5), n=790	RR 1.21 (95%CI: 0.61-2.38), p=0.58, I ² =0% unadjusted results
			Mortality	1 RCT (of 7) + 3 CCT (of 5), n=717	Not estimable (no events)
			Consultation rate	5 RCT (of 7) + 2 CCT (of 5), n=541	RR 1.10 (95%CI: 0.63-1.92), p=0.73, I ² =0% unadjusted results
Vaughan 2013⁹⁶	Laparaoscopic cholecystectomy	Day-surgery vs Overnight stay	Readmission	5 RCT n=464	RR 1.25 (95%CI: 0.43-3.63), p=0.68, I ² = 0%
			Mortality	1 RCT, n=86	Not estimable (no events)

CCT clinical controlled trial, CI confidence interval, n number, OR odds ratio, p probability, RCT randomized controlled trial, RR risk ratio, vs versus

Table 18 – AMSTAR2 evaluation of systematic reviews on laparoscopic cholecystectomy

	Hao 2017	Tang 2015	Vaughan 2013	
<i>Research question and inclusion criteria include components of PICO</i>	yes	yes	yes	3/3
<i>Explicit statement on protocol prior to conduct of review</i>	no	no	yes	1/3
<i>Explain selection study design (RCT and/or observational)</i>	yes	no	yes	2/3
<i>Comprehensive literature search strategy</i>	yes	partial yes	yes	3/3
<i>Study selection in duplicate</i>	yes	yes	yes	3/3
<i>Data extraction in duplicate</i>	yes	yes	yes	3/3
<i>List of excluded studies</i>	no	no	yes	1/3
<i>Details included studies</i>	partial yes	partial yes	yes	3/3
<i>Satisfactory technique to assess Risk of Bias included studies</i>	yes	yes	yes	3/3
<i>Source of funding included studies</i>	no	no	yes	1/3
<i>Appropriate methods for statistical combination of results (meta-analysis)</i>	yes	yes for RCT no for NSRI	yes	2/3
<i>Assess potential impact of risk of bias individual studies on the results of meta-analysis</i>	no	yes	yes	2/3
<i>Account for risk of bias individual studies when interpreting/discussing results of the review</i>	yes	yes	yes	3/3
<i>Satisfactory explanation for heterogeneity observed</i>	yes	no	yes	2/3
<i>Adequate investigation of publication bias</i>	yes	yes	yes	3/3
<i>Report potential sources of conflict of interest including funding</i>	yes	partial yes	yes	3/3
<i>Number of items with yes or partial yes</i>	12	10	16	



Table 19 – Included primary studies in systematic reviews on laparoscopic cholecystectomy

Primary studies	FU time	Type	Hao 2017			Tang 2015			Vaughan 2013		
			SR	Readmission	Mortality	SR	Readmission	Mortality	SR	Readmission	Mortality
Barthelsson 2008⁹⁷	1 week	RCT	x	x	-	x	-	-	x	x	-
Curet 2002⁹⁸	1 month	RCT	x	x	-	x	x	-	-	-	-
Dirksen 2001⁹⁹	1 week	RCT	x	x	x	x	x	x	x	x	x
Hollington 1999¹⁰⁰	NS	RCT	x	x	-	x	x	-	x	x	-
Johansson 2006¹⁰¹	1 week	RCT	x	x	-	x	x	-	x	x	-
Keulemans 1998¹⁰²	4 days	RCT	x	x	-	x	x	-	x	x	-
Salleh 2015¹⁰³	NS	RCT	x	x	-	-	-	-	-	-	-
Young 2001¹⁰⁴	10 days	RCT	x	x	-	x	x	-	x	-	-
Lezana Perez 2013⁵⁷	NS	CCT	-	-	-	x	-	x	-	-	-
Sharma 2004¹⁰⁵	6 weeks	CCT	-	-	-	x	x	-	-	-	-
Burney 2002¹⁰⁶	6 months*	CCT	-	-	-	x	-	-	-	-	-
Rosen 2001¹⁰⁷	30 day	CCT	-	-	-	x	x	x	-	-	-
Fiorillo 1996¹⁰⁸	NS	CCT	-	-	-	x	x	x	-	-	-

FU follow-up, SR systematic review, CCT controlled clinical trial, RCT randomized clinical trial, NS not specified

*not included in any meta-analysis on readmission or mortality

Table 20 – AMSTAR2 evaluation systematic review on appendectomy

<i>AMSTAR items</i>	<i>De Wijkerslooth 2021⁵⁴</i>
<i>Research question and inclusion criteria include components of PICO</i>	yes
<i>Explicit statement on protocol prior to conduct of review</i>	yes
<i>Explain selection study design (RCT and/or observational)</i>	no
<i>Comprehensive literature search strategy</i>	yes
<i>Study selection in duplicate</i>	yes
<i>Data extraction in duplicate</i>	yes
<i>List of excluded studies</i>	no
<i>Details included studies</i>	partial yes
<i>Satisfactory technique to assess Risk of Bias included studies</i>	yes
<i>Source of funding included studies</i>	no
<i>Appropriate methods for statistical combination of results (meta-analysis)</i>	yes
<i>Assess potential impact of risk of bias individual studies on the results of meta-analysis</i>	no
<i>Account for risk of bias individual studies when interpreting/discussing results of the review</i>	yes
<i>Satisfactory explanation for heterogeneity observed</i>	yes
<i>Adequate investigation of publication bias</i>	yes
<i>Report potential sources of conflict of interest including funding</i>	yes
<i>Number of items with yes or partial yes</i>	12



Table 21 – Characteristics and results of systematic review on appendectomy

Reference	Population	Intervention and comparator	Outcome of interest	Meta-analysis	Impact
De Wykerslooth 2021⁵⁴	Appendectomy for appendicitis	Same-day Ambulatory Outpatient Day case vs Inpatient Discharge POD1-2	30- day* readmissions	4 cohort studies SDD compared to historical controls	RR 1.47 (95%CI: 0.56-3.84), I ² =3%
				3 cohort studies SDD compared to POD1-2	RR 0.76 (95%CI: 0.67-0.88), I ² =0%
				2 multicentre studies SDD compared to POD1-2	aOR 0.81 (95%CI: 0.68-0.97), I ² =0%
			30-day* unplanned hospital visits	3 cohort studies SDD compared to historical controls	RR 1.30 (95%CI: 0.68-2.49), I ² =53%

aOR adjusted odds ratio, POD post-operative day, RR risk ratio, SDD same day discharge, vs versus.

Table 22 – Primary studies included in systematic review and meta-analysis on appendectomy

Primary studies	FU time	Type	SR	Meta-analysis		
			SR	Readmission SDD vs historical control	Readmission SDD vs POD 1-2	ED visits unplanned SDD vs historical controls
<i>Cash, 2012¹⁰⁹</i>	2 weeks	cohort	x	x	-	-
<i>Lefrancois, 2015¹¹⁰</i>	30 days	cohort	x	x	-	-
<i>Putnam 2014¹¹¹</i>	30 days	cohort	x	x	-	x
<i>Rosen 2017¹¹²</i>	2 weeks	cohort	x	x	-	x
<i>Cairo 2017¹¹³</i>	30 days	cohort (multicentre)	x	-	x	-
<i>Grigorian 2019¹¹⁴</i>	30 days	cohort (multicentre)	x	-	x	-
<i>Scott 2017¹¹⁵</i>	30 days	cohort	x	-	x	-
<i>Dubois 2010¹¹⁶</i>	30 days	cohort	x	-	-	x

ED emergency department, FU follow-up, POD post-operative day, SDD same day discharge, SR systematic review, vs versus



Table 23 – Characteristics and results of primary study on appendectomy

Reference	Setting and design	Population	Intervention and comparator	Outcomes
Grigorian 2021¹¹⁷	US 2016-2017 Retrospective cohort Database ACS-NSQIP Multivariable logistic regression	Lap appendectomy for non-perforated appendicitis <18y n=16 931	SDD n=3988 34y (IQR 25;49), 47,2% female 2016 22.2%, 2017 24.9% p<0.001 POD1-2 n=12 943 33y (IQR 25;47), 51.2% female	30-day readmission SDD n=71 (1.8%), POD1-2 n=297 (2.3%), p=0.051 aOR 0.80 (95% CI: 0.61-1.04), p=0.088 Controlled for age>65 years and history of hypertension, wound classification, American society of anesthesiologist's classification, chronic obstructive pulmonary disease, smoking, congestive heart failure, steroid use. 30-day mortality SDD n=1 (<0.01%), POD1-2 n=1 (<0.01%), p =0.378

ACS-NSQIP American College of Surgeons National Surgical Quality Improvement program, aOR adjusted odds ratio, IQR interquartile range, n number, p probability, POD post-operative day, SDD same day discharge, RR risk ratio, SDD same day discharge, US United States of America, y year.

Figure 2 – Risk of bias assessment for non-randomized trials (ROBINS-I) on appendectomy

		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Grigorian 2021								
	Domains: D1: Bias due to confounding. D2: Bias due to selection of participants. D3: Bias in classification of interventions. D4: Bias due to deviations from intended interventions. D5: Bias due to missing data. D6: Bias in measurement of outcomes. D7: Bias in selection of the reported result.							Judgement  Moderate  Low	



Table 24 – Characteristics and results of the systematic review on total hip and total knee arthroplasty

Reference	Population	Intervention and comparator	Outcome of interest	Meta-analysis	Impact
Ponugoti 2025 (ref)	Total joint arthroplasty (TJA) Total knee (TKA) Total hip (THA)	Outpatient vs Inpatient	Readmission	1 RCT and 6 prospective cohort n=1871 (722 outpatients)	TJA OR 0.66 (95%CI: 0.41-1.07), I ² =18%, p=0.09
				3 prospective cohort N=414 (192 outpatients)	TKA OR 0.67 (95%CI: 0.36-1.25), I ² =0%, p=0.21
				1 RCT and 3 prospective cohort n=1457 (530 outpatients)	THA OR 0.62 (95%CI: 0.26-1.46), I ² =51%, p=0.27
			Costs	1 RCT, 1 prospective and 2 retrospective cohort N=392 (213 outpatients)	Costs Mean difference -3.16 (95%CI: -4.97, -1.36) (in 1000s dollars) RR -2.88 (95%CI), I ² =93%, p<0.00001
Xu 2020²	Total joint arthroplasty (TJA) Total knee (TKA) Total hip (THA)	Outpatient vs Inpatient	Readmission	1 RCT and 6 retrospective cohort n= 177 792 (1613 outpatients)	TJA RR 0.87 (95%CI: 0.53-1.45), I ² =28%, p=0.60
				4 retrospective cohort TKA n=113 308 (844 outpatients)	TKA RR 1.03 (95%CI: 0.61-1.75), I ² =23%, p=0.90
				1 RCT and 3 retrospective cohort THA n= 64 407 (724 outpatients)	THA RR 0.72 (95%CI: 0.26-2.56), I ² =32%, p=0.51

n number, p probability, POD post-operative day, SDD same day discharge, RCT randomized controlled trial, RR risk ratio, THA total hip arthroplasty, TJA total joint arthroplasty, TKA total knee arthroplasty, US United States of America, y year.

Table 25 – AMSTAR2 evaluation of the systematic review on total hip and total knee arthroplasty

	Xu 2020	Ponugoti 2025
<i>Research question and inclusion criteria include components of PICO</i>	yes	yes
<i>Explicit statement on protocol prior to conduct of review</i>	no	yes
<i>Explain selection study design (RCT and/or observational)</i>	no	partial yes
<i>Comprehensive literature search strategy</i>	yes	yes
<i>Study selection in duplicate</i>	no	yes
<i>Data extraction in duplicate</i>	yes	yes
<i>List of excluded studies</i>	no	no
<i>Details included studies</i>	yes	yes
<i>Satisfactory technique to assess Risk of Bias included studies</i>	yes	yes
<i>Source of funding included studies</i>	no	no
<i>Appropriate methods for statistical combination of results (meta-analysis)</i>	no	no
<i>Assess potential impact of risk of bias individual studies on the results of meta-analysis</i>	yes	yes
<i>Account for risk of bias individual studies when interpreting/discussing results of the review</i>	yes	yes
<i>Satisfactory explanation for heterogeneity observed</i>	yes	yes
<i>Adequate investigation of publication bias</i>	yes	no
<i>Report potential sources of conflict of interest including funding</i>	partial yes	partial yes
<i>Number of items with yes or partial yes</i>	10	12



Table 26 – Characteristics and results of the primary studies on total hip and total knee arthroplasty

Reference	Setting + design	Population	Intervention and comparator	Outcomes
Bini 2015¹¹⁸	US 2009-2011 Retrospective cohort Kaiser Permanente Total Joint Replacement registry Multivariable generalized estimating equation logistic regression Non-inferiority testing	Primary TKA n=23 655 62.7% female 61.3% ≥65y	LoS 2d n=9024, 57.6% >65y, 56,1% female LoS 3d (reference) n= 11 804 62.2% >65y, 66.4% female LoS 4d n=2827 no information on age and gender	30-day readmission LoS 2d n=306 (3.4%) , LoS 3d n=381 (3.2%), LoS 4d n=158 (5.6%), p<0.001 aOR LoS 2d 0.96 (95%CI: 0.82-1.13), p=0.623 aOR LoS 4d 1.43 (95%CI : 1.18-1.75), p<0.001
Charpentier 2018¹¹⁹	US 1/1/2012-8/5/2017 Retrospective cohort Michigan Arthroplasty Registry collaborative Quality Initiative (61 hospitals) Multiple logistic regression with propensity score matching	Primary TKA LoS 1 or 2 midnights n=46 709 58% female After propensity score matching n=26 306	LoS 1 midnight n=15 009 65y (SD 12) LoS 2 midnights n=31 700 65y (SD 12)	90d readmission LoS 1 n=503 (3.35%), LoS 2 n=1274 (4.02%), p=0.2137 OR 0.872 (95%CI: 0.7483-1.0162), p=0.0794 (matched) 90d ED visit LoS 1 n=1393 (9.28%), LoS 2 n=3086 (9.74%), p=0.4993
Cram 2012¹²⁰	US 1991-2010 Retrospective cohort Medicare Provider Analysis and Review Part A data Linear and logistic regression (4 models progressively adjusting)	Elective primary unilateral non—staged TKA n=3 271 851 Revision TKA n=318 563 Medicare ≥65y	1991-1994 n=431 050 73.8y (SD 5.8) 65.7% female 1995-1998 n=530 128 1999-2002 n=578 614 2003-2006 n=816 497 2007-2010 n=915 562 74.2y (SD 6.2) 60.7% female	Primary TKA Mean LoS 1991-1994 7.9d, 1995-1998 4.9d, 1998-2002 4.3d, 2003-2006 3.9d, 2007-2010 3.5d (p<0.001) 30-day all-cause readmission 1991-1994 4.2%, 1995-1998 4.1%, 1999-2002 4.0%, 2003-2006 4.5%, 2007-2010 5.0% (p<0.001) LnLoS aOR 1.9 (95%CI: 1.9-2.0) aOR reference 2007

				2008 1.0 (95%CI: 1.0-1.0) 2009 1.0 (95%CI: 1.0-1.0) 2010 1.0 (95%CI: 1.0-1.0)
Daher ¹²¹	US 1/2010-12/2020 PearlDiver Mariner database Retrospective cohort Matched for age, sex and CCI Univariate analysis	Morbid obese (BMI >40) patients with primary elective TKA or THA = subgroup	TKA Inpatients n=16,113 61y (SD 8.5), 73% female Outpatients , n=5592 61y (SD 8.9), 72% female 5500 matched, 61y (SD 8.6), 72% female THA Inpatients n=4369 61y (SD 9.5), 60% female Outpatients n=1681 61y (SD 9.5), 60% female 1550 matched, 61y (SD 8.8), 61% female	ED visits 30-90d 30d TKA out 10.8% vs in 16.7%, p<0.001 30d THA out 3.2% vs in 4.9%, p<0.001 Readmission 30-90d 30d TKA out 2.2% vs in 4.0%, p<0.001 30d THA out 1.1% vs in 1.4%, p=0.45 Costs at 90d (p<0.001), TKA 6,942 (SD 7,445) out vs 15,771 (SD 17,153) in THA 7,223 (SD 7,739) out vs 13,164 (SD 16,034) in
DeMik 2022 ¹²²	US and Canada 2015-2018 Retrospective cohort prospectively collected data ACS-NSQIP database Univariate analysis and multivariate logistic regression	Elective primary TKA n=221 184	Outpatient LoS 0d n= 5655, 65.7y (SD 9.1) 53.4% female LoS 1-2d n=130 543 66.0y (SD 9.0) 58.1% female LoS >3d n=84 986 68.4y (SD 9.7) 67.2% female	30-day readmission 2.2% LoS 0d, 2.6% LoS 1-2d, 4.0% LoS>3d; p<0.0001 Adjusted OR (reference outpatient) aOR LoS 1-2: 1.09 (95%CI: 0.91-1.31) aOR LoS>3d : 1.56 (95%CI: 1.3-1.87) Adjusted OR (reference LoS 1-2d) aOR LoS >3d: 1.43 (95%CI : 1.4-1.5)
Gronbeck 2020 ¹²³	US and Canada 2011-2017 Retrospective cohort	Hispanic and Latino primary THA n=4107	2011-2013 n=973 61.0y (SD 13.2) 54.7% female	LoS > 2 midnights 2011-2013 n= 658 (67.6%), 2014-2015 n= 646 (47.9%), 2016-2017 n= 526 (29.5%), p<0.001



	ACS-NSQIP Univariate mixed-effect regression.		2014-2015 n=1352 59.8y (SD 12.9) 50.9% female 2016-2017 n=1782 59.5y (SD 13) 50.6% female	30-day readmission 2011-2013 n=24 (3.2%), 2014-2015 n=60 (4.5%), 2016-2017 n=49 (2.8%) p= 0.415 30-day mortality 2011-2013 n=1 (0.1%), 2014-2015 n=1 (0.1%), 2016-2017 n=3 (0.2%), p=0.672
Grosso 2019¹²⁴	US and Canada 2006-2016 Retrospective cohort NSQIP Multivariate regression analysis for LoS Bivariate analysis for death and readmission	Primary THA n=135 964	2006-2009 n=3873 33.1% <60y, 31.9% 60-70y, 23.3% 71-80y, 11.8% >80y 54.7% female 2010-2013 n=45 992 2014-2016 n=86 099 31.4% <60y, 37.3% 60-70y, 22.9% 71-80y, 8.5% >80y 54.7% female	LoS 2006-2009 3.8d (SD 2.5), 2010-2013 3.2d (SD 4.8) 2014-2016 2.7d (SD 2.5), p<0.001 30-day unplanned readmission 2010-2013 3.66%, 2014-2016 3.5%, p=0.142 Death 2006-2009 0.34%, 2010-2013 0.17%, 2014-2016 0.09% p=0.03
Iweala 2019¹²⁵	US and Canada 2005-2016 Retrospective cohort ACS-NSQIP Multivariate logistic regression on propensity matched cohorts	Elective THA and TKA (among other orthopedic procedures) Exclusion: invalid operative times and those with known resident-physician involvement	Outpatient Versus Inpatients Information on numbers and demographics are lacking	30-day readmission TKA Out OR 0.077 (95%CI: 0.006-1.046), p=0.054 THA Out 2.33%, In 1.84%, p=0.697 30-day mortality TKA Out OR 0.94 p=1.000 THA n=0

Jensen 2023¹²⁶	Denmark 2010-2020 Danish national patient register DNPR Descriptive cohort study prospectively collected data Logistic regression	Primary unilateral THA n=86 070 TKA n=70 323	2010-2020 Annual trend THA 68.5y (SD 11), 56% female 2010 n=7836, 2011 n=1804, 2012 n=7644 2013 n=7779, 2014 n=8222 2015 n=8509, 2016 n=9027 2017 n=8680, 2018 n=9200 2019 n=9535, 2020 n=1834 TKA 68.2y (SD 9.6), 59% female 2010 n=7265, 2011 n=6740 2012 n=7042, 2013 n=6945 2014 n=7123, 2015 n=6701 2016 n=6347, 2017 n=5760 2018 n=6958, 2019 n=7757 2020 n=1494	THA DC: THA 2010-2014 <0.8% increase to 5.4% in 2019 and 7.1% in 2020 LoS: THA median 3d (IQR 2;4) in 2010 to 1d (IQR 1;1) in 2019 90d readmissions 2010-2013 n=3129 (10%), 2014-2017 n=3191 (9.3%), 2018-2020 n=1812 (8.8%) <i>Adjusted OR (reference 2010-2013)</i> 2018-2020 aOR 0.8 (95%CI: 0.8-0.9) 2014-2017 aOR 0.9 (95% CI: 0.8-0.9) 90d mortality 2010-2013 n=129 (0.42%), 2014-2017 n= 110 (0.32%), 2018-2020 n=59 (0.29%) <i>Unadjusted OR (reference 2010-2013)</i> 2014-2017 OR 0.8 (95%CI: 0.6-1.0) 2018-2020 OR 0.9 (95%CI: 0.5-0.9)
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				TKA DC: 2010-2014 <0.8% increase to 2.8% in 2019 and 4.2% in 2020 LoS: TKA median 3d (IQR 3;4) in 2010 to 1d (IQR 1;2) in 2019 90d readmissions 2010-2013 n=2815 (10%), 2014-2017 n=2262 (8.7%), 2018-2020 n=1420 (8.8%) <i>Adjusted OR (reference 2010-13)</i> 2018-2020 aOR 0.8 (95%CI: 0.8-0.9) 2014-2017 aOR 0.8 (95%CI: 0.8-0.9) 90d mortality 2010-2013 n=85 (0.32%), 2014-2017 n=68 (0.26%), 2018-2020 n= 25 (0.15%) <i>Unadjusted OR (reference 2010-13)</i> 2014-2017 OR 0.9 (95%CI: 0.6-1.2) 2018-2019 OR 0.7 (95%CI: 0.4-1.1)
Jensen 2023¹²⁷	Denmark 2010-2020 Danish national patient register DNPR Retrospective cohort Logistic regression	Primary THA n=29 486 TKA n=15 116	DC (day-case) THA n=1353, 62.4y (SD10) 38% female TKA n=617, 63.7y (SD 9.6) 50% female ON (one overnight stay) THA n=28 133, 67.1y (SD 10), 49% female TKA n=14 499, 67.7y (SD 9.3), 51% female	THA 30-day readmission DC n=60 (4.4%) vs ON n=1242 (4.4%) DC aOR 1.2 (95%CI: 0.91-1.61) 90d mortality DC n<5 vs ON n=45 (0.16%) DC OR 0.46 (95%CI: 0.03-2.1) TKA 30-day readmission DC n=29 (4.7%) vs ON n=634 (4.4%) aOR 1.1 (95%CI: 0.69-1.5)

				90d mortality DC n<5 vs ON n=23 (0.16%) OR 1.0 (0.05-4.9)
Kirkland 2019¹²⁸	US 2000-2015 Retrospective cohort Dataset South Carolina department of revenue and fiscal affairs office Multivariate logistic regression	Primary THA or TKA n=172 760 65.34y (SD 10.9) 61% female	2000-2015 Annual trend	LoS decreased from mean 4.6d to mean 2.7d (p<0.001), a decrease of 0.5d every 4y 90d Readmission: 7.4% in 2000 to 7.0% in 2015 (p=0.068) For healthier patients (EH 3), each additional inpatient day increased readmission risk. For sicker patients (EH 4), staying 2 days instead of 1 day was protective against readmission risk (7.5% vs 8.7%, p<0.001). Each additional inpatient day beyond 2 days increased readmission risk for all patients, regardless of the level of comorbidities Total index cost of TJA increased from \$28 657 in 2000 to \$64 783 in 2015 (p<0.001). Average cost per day increased from \$7564 to \$21 127 (p<0.001).
Leroux 2019¹²⁹	Canada 2008-2016 Retrospective cohort Databases Ontario: CIHI, DAD, SDS, OHIP Propensity score matched analysis	Primary THA and TKA ≥18y TKA n=89 656 THA n= 52 610 THA matched n=2951 TKA matched n=14 379	Short LoS≤2d TKA n=14 645, 65y (IQR 59-71), 53.2% female THA n=9426, 63y (IQR 55;70), 41.2% female Longer LoS>2d TKA n=75 011; 67y (IQR 60;73), THA n=43 184; 66y (IQR 59 ;74), 53.1% female	THA 30-day Readmission Short n=20 (0.2%), Longer n=17 (0.2%), p=0.345 30-day ED presentation Short n=1246 (13.9%), Longer n=1171 (13.1%), p=0.187 Change in annual healthcare Costs Short -941 (IQR -2133; +830), Longer -973 (IQR -2278;+1062), p=0.273 TKA 30-day readmission Short n=24 (0.2%), Longer n=31 (0.2%), p=0.345 30-day ED presentation Short n=2245 (15.6%), Longer n=2327 (16.2%), p=0.187 Change in annual healthcare costs

				Short -768 (IQR-2214;+2780), Longer -815 (-2391;+2845), p=0.95
Mai 2021¹³⁰	US and Canada 2015-2016 Retrospective cohort ACS-NSQIP registry database Propensity matched analysis	Primary, elective unilateral TKA n=2198	Outpatient (<24h discharge) n=1099, 64.9y (SD 9.9), 55.7% female vs Inpatient (LoS ≥1d) n=1099, 64.6y (SD 9.9), 53.4% female	30-day mortality Outpatient n=0 (0%), Inpatient n=2 (0.2%) RD -0.18 (95%CI:-0.43-0.07), p=0.3 30-day readmission Outpatient n=31 (2.8%), Inpatient n=22 (2.0%) RD 0.82 (95%CI: -0.46-2.1), p=0.36 OR 1.41 (95%CI: 0.82-2.42).
Mantel 2023¹³¹	US Q4 2015 -Q1 2021 Retrospective cohort PREMIER Healthcare database Matched cohorts	TKA with AKS Attune knee system= implant designed to improve stability and motion of the knee joint	Outpatient (same-day) n=9365, 67.2y (SD 8.7), 59.4% female Inpatient (mean LoS 2d (SD 1.2)) n=39 337, 66.9y (SD 9.4), 60.9% female Matched n=2 x 9060	90d readmissions (all-cause) Outpatient : n=2543 (28.1%), inpatient n=2884 (31.8%), p<0.001 Inpatient OR 1.05 (95%CI 1.03-1.06), p=0.00 90 day costs (all-cause) Index costs averaged \$14 874 (95%CI: \$14 665–\$15 083) for outpatient cases and \$17 170 (95%CI: \$16 928– \$17 411) for inpatient cases, with a marginal mean difference of \$2295 (95%CI: \$1977–\$2614)
Mundi 2020¹³²	US and Canada 2015-2018 Retrospective cohort ACS-NSQIP registry database Multivariate logistic regression	THA and TKA n=333 312 THA n=124 150 TKA n=209 262 LoS 4d or longer were excluded	SDD (LoS0) THA n= 4954, 63y (IQR 56;70), 47.6% female TKA n= 5834, 66y (IQR 60;72), 53.4% female LoS 1d (LoS1) (accelerated discharge) THA n=40 486; 63y (IQR 57;70), 46.6% female TKA n=50 923, 66y (IQR 60;72), 53.8% female LoS 2-3d (LoS2-3)(routine discharge)	THA 30 d unplanned readmission SDD n=76 (1.5%), LoS1 n=840 (2.1%), LoS2-3 n=2687 (3.4%) aOR 0.60 (95%CI: 0.48-0.76) p<0.001 (SDD compared to routine) aOR 0.73 (95%CI: 0.67-0.79), p<0.001 (LoS1 compared to routine) TKA 30-day unplanned readmission SDD n=128 (2.2%), LoS1 n=1201 (2.4%), LoS2-3 n=4414 (2.9%) aOR 0.85 (95%CI: 0.71-1.01) p=0.07 (SDD compared to routine)

			THA n=78 710, 66y (IQR 59 ;74), 57.7% female TKA n=152 305, 67y (IQR 60 ;73), 63.4% female	aOR 0.87 (95%CI: 0.81-0.93) p<0.001 (LoS1 compared to routine)
Otero 2016¹³³	US and Canada 2011-2013 Retrospective cohort ACS-NSQIP Propensity matched comparisons, multivariate logistic regression	THA n=42 085 TKA n=64 513	THA POD0 n=249, 62.61y (SD 11.33), 50.2% female POD1 n=1940, 59.85y (SD 10.86), 37.5% female POD2 n=12 225, 61.85y (SD 10.96), 46.4% female POD3 n=19 569, 66.35y (SD 11.51), 61.05% female POD4+ n=8102, 68.28y (SD 12.71) 61.79% female TKA POD 0 n= 379 , 65.16y (SD 10.16), 57.5% female POD1 n=777, 63.41y (SD 9.71), 45.2% female POD2 n=14 056, 64.7y (SD 9.23), 53.07% female POD3 n= 35 870, 67.28y (SD 9.72), 65.82% female POD4+ n=13 431, 68.73y (SD 10.3), 66% female	THA 30-day readmission POD0 2.02%, POD1 2.06%, POD2 2.42%, POD3 3.75%, POD4+ 5.15%, p< 0.0001 aOR readmission (POD1 reference) POD0 aOR 1.8 (95%CI: 0.9-3.5) POD2 aOR 1.1 (95%CI : 0.8-1.5) POD3 aOR 1.5 (95%CI : 1.1-2.0) POD4+ aOR 3.3 (95%CI : 2.4-4.5) 30-day mortality POD0 0.80%, POD1 0.31%, POD 2 0.05%, POD3 0.13%, POD4+ 0.44%, p<0.001 TKA 30-day readmission POD0 1.93%, POD1 1.85%, POD2 2.63%, POD3 3.04%, POD4+ 5.23%, p< 0.0001 aOR readmission (POD1 reference) POD0 aOR 1.7 (95%CI: 0.9-3.0) POD2 aOR 0.9 (95%CI : 0.6-1.4) POD3 aOR 1.1 (95%CI : 0.7-1.6) POD4+ aOR 3.0 (95%CI : 2.1-4.5) 30-day mortality POD0 0.79%, POD1 0.13%, POD 2 0.10%, POD3 0.08%, POD4+ 0.22%, p<0.001



Ross 2019¹³⁴	Canada 2003-2016 Retrospective cohort IC/ES registry Ontario (Candian joint replacement registry) Multivariate logistic regression	TKA (primary and revision, any indication) >18y n=210 145 67.59y (SD 9.69) 61.2% female	2003- 2016 Annual trend 2003 n=7770 2004 n=7858 2005 n=10 005 2006 n=15 523 2007 n=16 741 2008 n=16 242 2009 n=15 657 2010 n=15 412 2011 n=16 129 2012 n=16 918 2013 n=17 532 2014 n=17 689 2015 n=17 845 2016 n=18 734	LoS Decrease from median 5d (p10-90: 3-8d) in 2003 to median 3d (p10-90: 2-4d) in 2016, p<0.0001 30-day readmission 2003 n=290 (3.7%), 2004 n=308 (3.9%), 2005 n=381 (3.8%), 2006 n=606 (3.9%), 2007 n=617 (3.7%), 2008 n=600 (3.7%), 2009 n=604 (3.9%), 2010 n=487 (3.2%), 2011 n=567 (3.5%), 2012 n=565 (3.3%), 2013 n=575 (3.3%), 2014 n=532 (3.0%), 2015 n=589 (3.3%), 2016 n=617 (3.3%) Overall 3.46% (LCL 3.05%, UCL 3.88%), p value missing 30-day ED visits 2003 n=784(10.0%), 2004 884 (11.2%), 2005 n=1156 (11.6%), 2006 n=1646 (10.6%), 2007 n=1828 (10.9%), 2008 n=1856 (11.4%), 2009 n=1818 (11.6%), 2010 n=1837 (11.9%), 2011 n=2003 (12.4%), 2012 n=2237 (13.2%), 2013 n=2421 (13.8%), 2014 n=2494 (14.1%), 2015 n=2573 (14.4%), 2016 n=2803 (15%) Overall 12.57% (LCL 11.82, UCL 13.32) p value missing
			LoS 1-2d LoS 3-4d LoS 5-6d LoS 7d	aOR 30-day readmission (reference LoS 1-2d) (crude data missing) LoS 3-4d 1.076 (95%CI: 0.997-1.16), p=0.0592 LoS 5-6d 1.208 (95%CI: 1.102-1.323), p<0.0001 LoS 7d 1.884 (95%CI: 1.713-2.071), p<0.0001
Rullan 2023¹³⁵	US and Canada 2010-2020 Retrospective cohort ACS-NSQIP registry database Descriptive (frequency)	Primary TKA n=470 456	Inpatient n=416 972 2010-2017 n=279 134 66.7y (SD 9.6), 62% female 2018-2020 n=137 838 67.4y (SD 9.3), 39% female 2010 n=7152; 2011 n=13 744; 2012 n=22 756; 2013 n=30 042;	LoS average LoS decreased markedly for both inpatient and outpatient TKAs LoS [days] 2010/2020; inpatient: 3.5/2.0d, outpatient: 2.7/0.9d 30-day readmission Inpatient : 2011 4%, 2012 3.9%, 2013 3.4%, 2014 3.2%, 2015 3.4%, 2016 3.2%, 2017 3.1%, 2018 3.1%, 2019 3%, 2020 2.8%

			2014 n=36 110; 2015 n=48 755; 2016 n=58 701; 2017 n=61 874; 2018 n=54 150; 2019 n=54 408; 2020 n=29 280 Outpatient n=53 854 2010-2017 n=3186 63.7y (SD 10.5) 56% female 2018-2020 n=50 298 67.0y (SD 8.9) 40% female 2010 n=67; 2011 n=111; 2012 n=159; 2013 n=222; 2014 n=327; 2015 n=530; 2016 n=751; 2017 n=1019; 2018 n=11 157; 2019 n=18 508; 2020 n=20 633	Outpatient : 2011 1.8%, 2012 1.3%, 2013 2.3%, 2014 3.1%, 2015 1.7%, 2016 2.7%, 2017 2.5%, 2018 2.6%, 2019 2.4%, 2020 2.3% 30-day mortality Inpatient: 2010 0.2%, 2011 0.2%, 2012 0.2%, 2013 0.1%, 2014 0.1%, 2015 0.1%, 2016 0.1%, 2017 0.1%, 2018 0.1%, 2019 0.1%, 2020 0.1% Outpatient: 2010 0%, 2011 0%, 2012 0%, 2013 0%, 2014 0%, 2015 0.4%, 2016 0.1%, 2017 0%, 2018 0.1%, 2019 0%, 2020 0%
Sarpong 2019¹³⁶	US and Canada 2006-2016 NSQIP Retrospective cohort Bivariate and multivariate analysis	Elective primary TKA n=221 764	2006-2009 n=7111 24.1% <60y, 36.6% 60-70y, 29.8% 71-80y, 9.5% >80y 65.2% female 2010-2013 n=71 943 2014-2016 n=142 710 23.4% <60y, 42.6% 60-70y, 27.0% 71-80y, 7.0% >80y 61.6% female	Mean LoS 2006-2009 3.7d (SD 4.1) 2010-2013 3.3d (SD 4.3), 2014-2016 3.0d (SD 3.7), p<0.001 30-day unplanned readmission 2010-2013 3.63%, 2014-2016 3.23%, p<0.001 OR 0.89, p<0.001 (no confidence interval reported) Death 2006-2009 0.10%, 2010-2013 0.12%, 2014-2016 0.06%, p=0.390
Sedrayakan 2016¹³⁷	US 2005-2011 Retrospective cohort California office of statewide health planning and development and New York statewide planning	THA n=128 370, >65y 35.8%, 64-74y 23.7%, >75y 40.6%, 60.5% female (NY) + n=207 901, <65y 32.5%, 65-74y 23.6%, >75y 43.9%, 61.6% female (CA),	2005-2006 THA n=38 071 (NY) + 62,209 (CA) TKA n=43 025 (NY) + 76 923 (CA) 2007-2008	LoS NY THA 2005 4d, 2006 4d, 2007 4d, 2008 4d, 2009 4d, 2010 4d, 2011 3d CA THA 2005 4d, 2006 4d, 2007 4d, 2008 4d, 2009 3d, 2010 3d, 2011 3d NY TKA 2005 4d, 2006 4d, 2007 3d, 2008 3d, 2009 3d, 2010 3d, 2011 3d



	and research cooperative system Generalized linear mixed models (adjusted)	TKA n=150 557, <65y 41.9%, 65-74y 32.6%, >75 25.5%, 65.7% female (NY) + n=265 834, <65y 37.7%, 65-74y 34.2%, >75y 28.1%, 62% female (CA) included also CABG surgery patients	THA n=35 503 (NY) + 58 267 (CA) TKA n=42 003 (NY)+ 75 615 (CA) 2009-2011 THA n=54 795 (NY) + 87 425 (CA) TKA n=65 529 (NY)+ 113 296 (CA)	CA TKA 2005 4d, 2006 3d, 2007 3d, 2008 3d, 2009 3d, 2010 3d, 2011 3d 30-day readmission 2009-2011 versus 2005-2006 NY THA aOR 0.79 (95%CI: 0.77-0.82), p<0.001 CA THA aOR 0.51 (95%CI: 0.49-0.52), p<0.001 NY TKA aOR 0.72 (95%CI: 0.70-0.75), p<0.001 CA TKA aOR 0.42 (95%CI: 0.41-0.43), p<0.001
Sutton 2016 ¹³⁸	US- Canada 2011-2012 NSQIP Retrospective cohort Univariate analysis and multivariable logistic regression model	Primary unilateral THA n=19 909 or TKA n=31 044	Early discharge, LoS 0-2d THA n=6773, 61.2y (SD 11), 44.7% female TKA n=7044, 64.4y (SD 9.3), 51.7% female Standard discharge LoS 3-4d THA n=13 136, 66.2y (SD 11.4), 61.5% female TKA n=24 000 ; 67.4y (SD 9.8), 65.8% female	THA 30-day readmission LoS 0-2d n=161 (2.4%), LoS 3-4d n=500 (3.8%), p<0.0001 aOR 0.83 (95%CI: 0.67-1.01), p=0.067 (reference LoS 3-4d) 30-day mortality LoS 0-2d n=9 (0.13%), LoS 3-4d n=22 (0.17%), p=0.71 TKA 30-day readmission LoS 0-2d n=119 (1.7%), LoS 3-4d n=446 (1.9%), p= 0.0005 aOR 0.86 (95%CI: 0.72-1.02), p=0.088 (reference LoS 3-4d) 30-day mortality LoS 0-2d n=13 (0.18%), LoS 3-4d n=34 (0.14%), p=0.39
Vorhies 2012 ¹³⁹	US 2002-2007 Medicare Patient Safety Monitoring System Retrospective cohort Hierarchical generalized linear modeling	TKA for degenerative arthritis n=4063	2002-2004 72.8y (SD 7.4) 64.7% female 2005-2007 72.8y (SD 7.6) 65.1% female	LoS 2002 1.37 (95%CI: 1.34-1.4) 2003 1.33 (95%CI: 1.29-1.36), p=0.029 2004 1.3 (95%CI: 1.27-1.33), p<0.001 2005 1.3 (95%CI: 1.27-1.34), p<0.001 2006 1.27 (95%CI: 1.24-1.3), p<0.001 2007 1.23 (95%CI: 1.20-1.26), p<0.001 (estimate is mean length of stay at log score)



2002-2004 4.1d (SD 2.0) 2005-2007 3.8d (SD 1.7)
OR 1.27 (95%CI: 1.25-1.29), $p < 0.0001$

30-day all cause readmission

aOR 2002 reference

2003 1.09 (95%CI: 0.77-1.55), $p=0.626$

2004 1.17 (95%CI: 0.83-1.64), $p=0.379$

2005 1.17 (95%CI: 0.83-1.64), $p=0.367$

2006 1.16 (95%CI: 0.84-1.64), $p=0.363$

2007 1.15 (95%CI: 0.82-1.59), $p=0.419$

2002-2004 5.5%, 2005-2007 5.8%

OR 1.08 (95%CI : 0.88-1.32), $p=0.46$

ACS-NSQIP Americal College of Surgeons National Surgical Quality Improvement Program, AKS Attune Knee System, aOR adjusted odds ratio, CA California, CI confidence interval, CIHI Canadian Institute for Health Information, d day(s), DAD Discharge Abstract Database, DC day-case, DNPR Danish National Patient register, ED emergency department, IC/ES Institute for Clinical and Evaluative Sciences, IQR interquartile range, MARCQI Michigan Arthroplasty registry collaborative quality initiative

n number, Ln logarithme, LoS length of stay, NSQIP National surgical quality improvement program, NY New York, OHIP Ontario Health Insurance Plan, ON overnight, OR odds ratio, p probability, POD post-operative day, Q quartile, RD risk difference, SD standard deviation, SDS Same Day Surgery, THA total hip arthroplasty, TKA total knee arthroplasty, US United States of America, Y year.



Figure 3 – Risk of Bias assessment for non-randomized trials (ROBINS-I) on total hip and total knee arthroplasty

Study	Risk of bias domains							Overall
	D1	D2	D3	D4	D5	D6	D7	
Bini 2015	-	-	+	+	+	+	-	+
Charpentier 2018	-	+	+	-	-	+	+	+
Cram 2012	-	-	+	+	+	+	-	+
Daher 2025	-	-	-	-	-	+	+	+
DeMik 20222	-	-	+	-	+	+	+	+
Gronbeck 2020	+	-	+	+	-	+	+	+
Grosso 2019	+	-	+	+	-	+	+	+
Iweala 2019	-	+	-	-	+	-	+	+
Jenssen 2023_A	-	-	+	+	+	+	+	+
Jenssen 2023_B	-	-	+	+	-	+	+	+
Kirkland 2020	+	-	+	+	+	-	+	+
Leroux 2020	-	+	+	+	-	+	+	+
Mai 2021	-	+	+	-	-	+	+	+
Mantel 2023	-	-	+	-	-	+	+	+
Mundi 2020	-	-	+	-	+	+	+	+
Otero 2016 (readmission)	-	+	+	-	+	+	+	+
Otero 2016 (mortality)	+	+	+	-	+	+	+	+
Ross 2019 (time trend)	+	-	+	+	+	+	-	+
Ross 2019 (LOS categories)	-	-	+	+	+	+	-	+
Rullan 2023	+	-	-	-	+	+	+	+
Sarpong 2019 (readmission)	-	-	+	+	-	+	+	+
Sarpong 2019 (mortality)	+	-	+	+	-	+	+	+
Sedrakayan 2019	-	-	+	+	-	+	+	+
Sutton 2016 (readmission)	-	-	+	+	-	+	+	+
Sutton 2016 (mortality)	+	-	+	+	-	+	+	+
Vorhies 2018	-	-	+	+	+	-	+	+

Domains:
D1: Bias due to confounding.
D2: Bias due to selection of participants.
D3: Bias in classification of interventions.
D4: Bias due to deviations from intended interventions.
D5: Bias due to missing data.
D6: Bias in measurement of outcomes.
D7: Bias in selection of the reported result.

Judgement
+ Serious
- Moderate
+ Low

Table 27 – Characteristics and results of primary studies on heart failure

Reference	Setting + design	Population	Intervention comparator and	Outcome
Arundel 2021¹⁴⁰	US 1998-2001 Propensity score matched cohort Alabama heart failure project registry 106 hospitals	Medicare benef. with principal discharge diagnosis HF n=855	LoS 1-5d n=4778, 75y (SD 11) 56% female LoS >5d n=3777, 76y (SD 11) 59% female 2723 matched patients 76y (SD11), 58-59% female	30-day all-cause readmission LoS 1-5d n=536 (20%), LoS>5d n=614 (23%) HR 1.16 (95%CI: 1.04-1.31), p=0.01 HR 1.02 (95%CI: 1.01–1.04), p < 0.001 (LoS continuous variable) . 30-day HF readmission LoS 1-5d n=200 (7%), LoS>5d n=221 (8%) HR = 1.12 (95% CI: 0.92–1.35), p=0.266 30-day all-cause mortality LoS 1-5d n=127 (5%), LoS > 5d n=177 (7%) HR 1.41 (95%CI: 1.12-1.76), p=0.003 HR 1.05 (95%CI: 1.03-1.07), p<0.001 (LoS continuous variable)
Carbajosa 2016¹⁴¹	Spain cohort EAHFE I (1m 2007) EAHFE III (2m 2011) 10 hospitals with SSU	Heart failure patients n=1359	LoS≤4d n=568, 79.7y (SD 8.7), 55.3% female LoS>4d n=790, 78.0y (SD 10.7), 52.8% female	30-day mortality LoS≤4d n=3 (0.5%), LoS>4d n=4 (0.5%), p=0.959 30-day readmission LoS≤4d n= 118 (22.9%), LoS>4d n=203 (27.7%), p= 0.059
Carey 2014¹⁴²	US (California) 2008 Retrospective cohort State inpatient database and supplemental files for revisit analysis	Adult patients admitted to acute care hospitals treated for heart attack or heart failure and discharged alive Excluded LoS>25d	LoS Natural logarithm of LoS = LnLoS	30-day readmission in MDC 5 (for HF patients) 12% (full sample) vs 12% (index stay≤7d) LnLoS coefficient –0.004 p<0.1 (0.002 SE) (full sample) LnLoS coefficient –0.007 p<0.05 (0.003 SE) (index LoS≤7d)

	GEE (generalized estimating equation technique)	HF n=47 563 2.2% 20-39y, 17.4% 40-59y, 15.6% 60-69y, 38.6% 70-84y, 26.2% >85y 51.1% female		Simulation results 30-day readmission: Probability 0.121, marginal probability 0.001 change 0.9% (how probability changes if LoS is increased by one day) For index hospitalization LoS≤7d: marginal probability 0.003 and change 7.9% <i>coefficient on LnLoS is consistently negative and statistically significant</i>
Cotter 2016¹⁴³	International (North America, Australia, Israel and Europe) 4/2003-11/2005 Post hoc analysis of RCT VERITAS-1 and -2 Multivariable logistic regression and Cox proportional hazard	AHF ≥18y admitted for AHF within previous 24h with persistent dyspnoe at rest and RR >24/min and ≥1 dose IV diuretic 2-24h before study drug initiation n=1347	LoS +1d Short LoS n=501, 68.3y (SD 12.67), 39.5% female Medium LoS n =397, 71.4y (SD 12.06), 43.1% female Long LoS n=384, 70.7y (SD 11.93), 40.6% female	10d post discharge readmission (during the first 10 days after discharge in patients discharged before day 20) (change of 1 day) aOR 1.06 (95%CI: 0.99–1.14), p=0.096 aOR 1.05 (95%CI: 0.97-1.13), p=0.234 (including in hospital WHF) 90d mortality hazard ratio for 1-day increase: aHR 1.04 (95%CI: 1.01–1.07), p=0.017 aHR 1.03, (95% CI 1.00–1.06), p=0.063 (including in hospital WHF)
Davison 2016¹⁴⁴	International (Europe, North America, Israel, Argentina and Russia) 5/2007-1/2009 Post hoc analysis RCT PROTECT (rolapylline)	AHF Patients with pre-existing HF, mild or moderate renal impairment, increased BNP and dyspnoe at rest or minimal exertion associated with signs and symptoms of volume overload requiring IV diuretics, enrolled	LoS +1d (for analysis) Short LoS (1st tertile) n=852, 69.6y (11.96), 30.5% female Medium LoS	30-day all-cause readmission n=372/1849 (20%) aOR 1.02 (95%CI: 1.00-1.05), p=0.0525 aOR 1.02 (95%CI: 1.00-1.05), p=0.0888 (including in hospital WHF) 30-day HF readmission n=182/1849 (10%) aOR 1.00 (95%CI: 0.97-1.04), p=0.8152 aOR 1.00 (95%CI: 0.97-1.04), p=0.9312 (including in hospital WHF) 90d mortality (all cause) n=153/1902 (8%) LoS≤14d, aHR 1.11 (95%CI: 1.05-1.17), p=0.0003

	Multivariable logistic regression and Cox proportional hazard	within 24h of admission, n=2033	n=484, 70.8y (SD 11.39), 34.3% female Long LoS n=566, 69.8y (SD 11.38), 35.5% female	LoS≤14d, aHR 1.10 (95%CI: 1.04-1.16), p=0.003 (+ in hosp WHF) LoS>14d, aHR 0.99 (95%CI: 0.96-1.02), LoS>14d, aHR 0.99 (95%CI: 0.96-1.02), p=0.003 (+ in hosp WHF)
Eapen 2013¹⁴⁵	International 27 countries (Europe, North America, Latin America, Asia) 5/2007-8/2010 Post hoc analysis RCT ASCEND-HF (nesiritide) Multivariable logistic regression model (2-level and 3-level)	Acute decompensated HF n=6848 with 30-day readmission n=779, 66.0y (IQR 56;76), 34% female without 30-day readmission n= 6045, 68.0y (IQR 56;77), 34.4% female	LoS +1d Mean LoS varied between 4.9 to 14.6d depending on the country (6.1d in US)	30-day all-cause readmission Rate varied between 2.5% and 25% depending on the country, 17.8% in US aOR 0.86 (95%CI: 0.75-0.98), p=0.02 (all-countries) aOR 0.92 (95%CI: 0.85–1.00), p=0.06 (US) 30-day HF readmission Inverse correlation between country level LoS and readmission r=-0.52 p<0.01 aOR 0.79 (95%CI: 0.69–0.9), p=0.03 (all countries) aOR 0.90 (95%CI: 0.80-1.01), p=0.07 (US)
Khan 2015¹⁴⁶	International 20 countries (North and South America, Western and Eastern Europe) 10/2003-2/2006 Post-hoc analysis of RCT EVEREST (Tolvaptan) Multivariable mixed effects logistic regression model (2-level)	Worsening HF ≥18y with left ventricular ejection fraction (EF)≤40%, and hospitalized for HF with two or more signs or symptoms of fluid overload. n=4133 with 30-day readmission n=629, 66.5y (SD 12.8), 23.6% female	LoS Median (IQR) LoS was 8 (4;11) days Quintile 1 (Q1) ≤3d Quintile 2 (Q2) 4-6d Quintile 3 (Q3) 7-9d Quintile 4 (Q4) 10-13d Quintile 5 (Q5) ≥14d	30-day all-cause readmissions 15.7% (95%CI: 14.6–16.8), r=0.09, p<0.01 <i>Adjusted including medication</i> aOR Q2 (ref Q1) 1.05 (95%CI 0.82–1.39) aOR Q3 (ref Q1) 1.06 (95%CI: 0.78–1.43) aOR Q4 (ref Q1) 1.10 (95%CI : 0.77-1.57) aOR Q5 (ref Q1) 1.41 (95%CI: 0.93-2.12) 1.10 (0.78–1.57) (all cause)



		without 30-day readmission n=3391, 65.6y (SD 11.6), 25.6% female		30-day HF readmissions 5.6% (95% CI 4.9–6.3), $r=-0.01$, $p=0.367$ aOR Q2 (ref Q1) 0.77 (95%CI 0.52–1.13) aOR Q3 (ref Q1) 0.64 (95%CI: 0.41–1.00) aOR Q4 (ref Q1) 0.82 (95%CI : 0.50-1.36) aOR Q5 (ref Q1) 0.42 (95%CI: 0.23-0.77) adjustment for 30-day mortality only significant results for HF readmission in Q5 (ref Q1): aHR 0.48 (95%CI 0.26-0.90) NS adjusted OR for cardiovascular non HF and non-cardiovascular readmissions
Kociol 2013¹⁴⁷	US 1/2005-12/2006 Retrospective cohort American Heart Association's Get With The Guidelines-Heart Failure (GWTG-HF) quality improvement registry linked to Medicare claims	HF diagnosis, ≥65y n=17 387	LoS Median hospital level LoS 4.9d (IQR 4.2;5.6) And Quartiles	30-day readmission Median 23.2%, $r=0.04$, $p=0.6$ (NS) adjusted $r=0.07$, $p=0.42$ (NS) 30-day HF readmission 8.2%, no correlation between LoS and HF readmission after risk adjustment (no data available) 30-day mortality Q1 vs Q4 aOR 0.75 (95%CI: 0.60-0.95) Q2 vs Q4 aOR 0.84 (95%CI: 0.66-1.07) Q3 vs Q4 aOR 0.91 (95%CI: 0.74-1.13)
Marenzi¹⁴⁸	Italy 2003-2018 Retrospective cohort Administrative health database of Lombardy region	≥18y hospitalized Acute HF n=414,164 hospitalisations n= 286,028 patients	2003-2006 , n= 106,651, 79y (IQR 72-85), 50% female, LOS 8d (IQR 5-13) 2007-2010 , n=111,012, 80y (IQR 73-86), 50% female, LOS (9d (IQR 6-13d)	30-day mortality n= 55,460 (13.4%) 2003-2006 13,224 (12.4%) 2007-2010 14,681 (13.2 %) 2011-2014 13,604 (13.6%) 2015-2018 13,951 (14.5%), $p<0.0001$ OR for trend 1.06 (95%CI: 1.05-1.07) aOR for trend 1.00 (95% CI: 0.98-1.01)

	Multivariate log-binomial regression model (mortality) or COX regression models (readmission)	LOS median 9d (IQR 6-13)	2011-2014, n=100,304, 82y (IQR 75-87), 51% female, LOS 9d (IQR 6-14d) 2015-2018, n=96,287, 83y (IQR 76-88), 51% female, LOS 9d (IQR 6-14d)	30d readmission for AHF n= 8452 (2.2%) 2003-2006 2474 (2.5%) 2007-2010 2488 (2.4%) 2011-2014 1902 (2.1%) 2015-2018 1588 (1.8%), p<0.0001 HR for trend 0.89 (95%CI: 0.87-0.9) aHR for trend 0.86 (0.84-0.88) average risk increment or decrement going from one period to the following one
Masri 2018¹⁴⁹	US 1/2008-9/2015 Retrospective cohort data collected part of quality improvement project Multisite health system 18 hospitals Andersen-Gill method (Cox proportional-hazards) multivariable regression	primary diagnosis of HF n=21 339 patients n=52 493 admissions Excluded cardiac surgery, Tx, LV assist device insertion, died during hospitalisation n=50 654 live discharges	Observation (Out) n=2648 (5%), 69.1y (SD 15.2), 52.2% female) versus Inpatient stay ≤2d (In) n= 8709 (17%), 72.1y (SD 14.9), 48.3% female	All-cause readmission 3 months: In 45.9%, Out 56% 1 year: In 70.7%, Out 82.5% 1 year aHR 0.76 (95%CI : 0.72-0.8), p<0.01 HF readmission 3 months: In 33.2%, Out 40.3% 1 year: In 55.3%, Out 66.5% 1 year aHR 0.77 (95%CI : 0.73-0.82), p<0.01 All-cause mortality 3 months: In 10.9%, Out 8.8% 1 year: In 25.2%, Out 24.2% 1 year: 0.95 (95%CI : 0.88-1.03), p=0.23.
Miro 2017¹⁵⁰	Spain 1/2014-2/2014 Prospective cohort (IMPROV-ED) 27 Emergency departments	Acute decompensated HF and without STEMI discharged alive n=2986	Discharged from ED (Out) n=787, 78.6y (SD 9.5), 54.8% female vs Discharged after hospitalization (In) (ref)	30-day readmission Out 15.9%, In 15% aHR Out 1.479 (95%CI: 1.129-1.936) aHR Out 1.393 (95%CI: 1.062-1.825) (including centre) 30-day mortality Out 2.3%, In 5.0%



	Multivariable logistic regression		n=2199, 80.2y (SD 10.2), 55.2% female	aHR Out 0.408 (95%CI: 0.173-0.960) aHR Out 0.431 (95%CI: 0.182–1.019) (including centre) 30-day ED visit Out 13%, In 8.2% aHR Out 1.758 (95%CI 1.284-2.406) aHR Out 1.741 (95%CI: 1.269–2.389) (including centre)
Miyazaki 2023¹⁵¹	Japan 4/2018-3/2021 Prospective cohort Japanese national diagnosis-procedure-combination DPC database Multiple logistic regression Propensity score matching short LoS and middle LoS	Patients whose most resource- consuming diagnosis was HF n=180 125 Exclusion: <20y, died in hospital, planned admission, readmission ≥31d, ≥2 nd readmission, transfer other hosp, index admission in 4/2018 or 3/2021, precipitating diagnosis not HF, cancer, missing data With 30-day readmission n=10 283, 7.4% ≤64y, 14% 65-74y, 78.6% ≥75y, 50.9% female Without 30-day readmission n=169 842, 13.2% ≤64y, 16% 65-	LoS (relativized) Short (<p25) <0.6, n=38 565 Middle (p25-p75) 0.6-1.4, n=98 782 Long (>p75) >1.4, n=42 778 37 199 matched pairs short and middle LoS	30-day HF readmission Short n=2108 (5.5%), Middle n=5413 (5.5%), Long n=2762 (6.5%) aOR Short (ref Middle) 1.075 (95%CI: 1.011-1.143), p=0.021 aOR Long (ref Middle) 1.033 (95%CI: 0.976-1.093), p=0.260 <i>After propensity score matching:</i> 30-day HF readmission short LoS 5.49%, middle LoS 5.05%, p = 0.008

		74y, 70.9% ≥75y, 48.1% female		
Moriyama 2019¹⁵²	Japan 1/2006-6/2015 Prospective cohort West Tokyo heart failure database (WET-HF) Multivariate analysis Cox	Acute FH = rapid onset FH or a change in signs and symptoms of HF that required urgent therapy and hospitalization Exclusion: in hospital death (n=110) and missing data (n=1) n=2785	Shorter LoS≤12d n=1022, 74.4y (SD 12.9), 39.8% female Intermediate 13-19d (ref) n=825, 73.3y (SD 13.2), 37.8% female Longer LoS ≥20d n= 938, 73.7y (SD 14.3), 39.8% female OR 6 categories LoS 1-9d, 10-12d, 13-15d (ref), 16-20d, 21-28d, >29d	30-day HF readmission n=114 Shorter LoS aHR 1.71 (95%CI: 1.05–2.77), p=0.03 Longer LoS aHR 1.59 (95%CI: 0.96-2.65), p=0.07 30-day cardiac death n=8 30-day composite endpoint of cardiac death and HF readmission Shorter LoS aHR 1.66 (95%CI: 1.04-2.65), p=0.03 Longer LoS aHR 1.56 (95%CI: 0.95-2.54), p=0.08 6 categories: 30-day HF readmission 1–9 d aHR 2.23 (95%CI: 1.12–4.44) >29d aHR 1.97 (95%CI : 0.95–4.09)
Reynolds 2015¹⁵³	US 2008-2011 Retrospective cohort Kaiser Permanente Southern California administrative and clinical databases and EMR, virtual data warehouse Cox proportional hazards models	Hospitalisation with primary diagnosis HF, ≥18y, discharged alive Exclusion: hospitalisation for HF in the preceding 12m and LoS>30-day n=19 927 73.9y (SD 13.1), 47.1% female	LoS Mean LoS 3.8d (SD 4.8) LoS 1d, n=4457 LoS 2d, n=4872 LoS 3-4d, n=5748 LoS 5-10d, n=46 064 LoS 11-30-day, n=786	30-day all-cause readmission LoS 1d, 19.4% (95%CI: 18.2-20.5), aHR 0.93, NS LoS 2d, 19.1% (95%CI: 18-20.2), aHR 0.92, NS LoS 3-4d, 20.5% (95%CI: 19.5-21.6) (reference) LoS 5-10d, 23.3% (95%CI: 22-24.6), aHR 1.17 (95%CI: 1.07-1.28) LoS 11-30d, 28.9% (95%CI: 25.7-32.1), aHR 1.52 (95%CI: 1.30- 1.76) 30-day all-cause mortality LoS 1d, 3.1% (95%CI: 2.7-3.7), aHR 0.53 (95%CI: 0.43-0.65) LoS 2d, 5.2% (95%CI: 4.6-5.9), aHR 0.87 NS



				LoS 3-4d, 6.2% (95%CI: 5.6-6.9) (reference) LoS 5-10d, 9.4% (95%CI: 8.5-10.3), aHR 1.52 (95%CI: 1.3-1.76) LoS 11-30-day, 15.6% (95%CI: 13.1-18.2), aHR 2.71 (95%CI : 2.19-3.35)
Samsky 2019¹⁵⁴	US and Canada 4/2005-12/2015 cohort Canadian institute of health information discharge abstract database (CIHI-DAD) and Medicare hospitalisation files Multivariable logistic regression model	Patients admitted with primary diagnosis HF Canada n=265 165 77y (SD 12.2), 49.9% female, discharged alive n=239 031 US n=2 794 579 78y (SD 11.2), 54.6% female, discharged alive n= 2 781 829	LoS time trend <i>Canada</i> LoS declined from mean 7.5d (SD 5.7) in 2005 to 7.3d (SD 5.6) in 2015, p<0.001 <i>US</i> LoS remained stable at a mean of 4.9d (SD3.7) in 2005 and 4.9d (SD 3.5) in 2015 LoS +1d	30-day all-cause readmission <i>Canada</i> n=43 498 2005 19.7% to 2015 17.6% (p<0.001); decreasing 1.1% per year before and 1.3% after October 2012 (p=0.84 for slope change), patient level aOR 1.01 (95%CI: 1.01-1.01) <i>US</i> n= 552 608 2005 21.2% to 2015 18.5% (p<0.001); decreasing 1.6% per year before and 1.8% per year after October 2012 (p=0.60 for slope change), patient level aOR 1.04 (95%CI= 1.04-1.04) 30-day HF readmission <i>Canada</i> 2005 8.4% to 2015 6.9% (p<0.001), patient level aOR 1.00 (95%CI: 1.00-1.01) <i>US</i> 2005 7.6% to 2015 5.7% (p<0.001), patient level aOR 1.03 (95%CI: 1.03-1.03) 30-day non cardiovascular readmission <i>Canada</i> 2005 10.4% to 2015 10.4% (p=0.77), patient level aOR 1.01 (95%CI: 1.01-1.02) <i>US</i> 2005 13.4% to 2015 12.3% (p<0.001), patient level aOR 1.04 (95%CI: 1.04-1.04)
Sud 2017¹⁵⁵	Canada (Ontario) 4/2003-3/2012 Cohort	Patients ≥65y, residing in Ontario, hospitalized with a primary diagnosis of HF, admitted directly from ED (acute	LoS continuous OR LoS 1-2d (short)	30-day readmission All-cause Nonlinear relationship with LoS (p=0.04) with higher rates among patients with longer LoS

Canadian institute of health information discharge abstract database (CIHI-DAD)

Cause-specific Cox regression model and multiple logistic regression models

presentation) and discharged home to independent living

Exclusion:

missing data, left ventricular assist device or cardiac transplant and LoS longer than 14 days

n=58 230

n=5353, 69.3% ≥75y, 46.1% female

LoS 3-4d

n=7865, 73% ≥75y, 48.6% female

LoS 5-6d (ref)

n=15 288; 74.2% ≥75y, 50.7% female

LoS 7-8d

n=8786, 75.1% ≥75y, 52.4% female

LoS 9-14d (long)

n=11 779, 75.3% ≥75y, 53.1% female

Long LoSa HR 1.15 (95%CI: 1.09-1.22), p<0.001

Cardiovascular and HF : nonlinear relationship with LoS (p<0.001 and p=0.005), U-shaped with increased rates at shorter and longer LoS

CV short LoS aHR 1.12 (95%CI: 1.04-1.21), p=0.003

CV long LoS aHR 1.11 (95%CI: 1.04-1.19), p=0.003

HF short LoS aHR 1.15 (95%CI: 1.04-1.27), p=0.006

HF long LoS aHR 1.14 (95%CI: 1.04-1.25), p=0.004

Non-cardiovascular: linear relationship with LoS (p=0.53);

Long LoS aHR 1.17 (95%CI: 1.07-1.29), p<0.001

Short LoS aHR 0.87 (95%CI : 0.79-0.96), p=0.006

30-day mortality risk

All-cause

LoS 1-2d n=323, aHR 0.96 (95%CI: 0.83-1.11)

LoS 3-4d n=424, aHR 0.79 (95%CI: 0.68-0.91)

LoS 5-6d n=441, reference

LoS 7-8d n= 344, aHR 1.12 (95%CI: 0.97-1.29)

LoS 9-14d n=551, aHR 1.28 (95%CI: 1.14-1.43)

Cardiovascular

LoS 1-2d n=198, aHR 0.91 (95%CI: 0.76-1.09)

LoS 3-4d n=270, aHR 0.77 (95%CI: 0.65-0.91)

LoS 5-6d n=282, reference



				LoS 7–8d n=208, aHR 1.06 (95%CI: 0.89–1.27)
				LoS 9–14d n=340, aHR 1.23 (95%CI: 1.06–1.44)
				Non-cardiovascular
				LoS 1–2d n=125, aHR 1.03 (95%CI: 0.81–1.32)
				LoS 3–4d n=154, aHR 0.82 (95%CI: 0.64–1.06)
				LoS 5–6d n=159, reference
				LoS 7–8d n=136, aHR 1.22 (95%CI: 0.99–1.51)
				LoS 9–14d n=211, aHR 1.35 (95%CI: 1.09–1.67)

aHR adjusted hazard ratio, aOR adjusted odds ratio, ASCEND-HF Acuted Study of Clinical Effectiveness of Nesiritide in Decompensated Heart Failure, CI confidence interval, CIHI Canadian Institute for Health Information, CV cardiovascular, d day(s), DAD Discharge Abstract Database, DPC diagnosis procedure combination, EAHFE Epidemiology of Acute Heart Failure in Emergency departments, ED emergency department, EMR electronic medical record, GWTG-HF get with the guidelines heart failure, HF heart failure, n number, LoS length of stay, LV left ventricular, m months, p probability, PROTECT a placebo-controlled randomized study of the selective A1 adenosine receptor antagonist rolofylline for patients hospitalized with acute decompensated heart failure and volume overload to assess treatment effect on congestion and renal function, Q quartile, SD standard deviation, US United States of America, VERITAS Value of Endothelin Receptor Inhibition With Tezosentan in Acute Heart Failure Studies, WHF worsening heart failure, y year.

Figure 4 – Risk of Bias assessment for non-randomized trials (ROBINS-I) on heart failure

Study	Risk of bias domains							Overall
	D1	D2	D3	D4	D5	D6	D7	
Arundel 2021	-	+	+	+	-	+	+	-
Carbajosa 2016	-	-	+	+	+	-	+	-
Carey 2014	-	-	-	-	-	-	+	-
Cotter 2016	-	-	+	+	-	+	-	-
Davison 2016	-	-	+	+	+	+	-	-
Eapen 2016	-	-	+	+	-	+	+	-
Khan 2015	-	-	+	+	+	+	-	-
Kociol 2013	-	-	+	+	+	+	+	-
Marenzi 2025	-	-	+	+	-	+	+	-
Masri 2018	×	-	+	-	-	-	-	×
Miro 2017	-	-	+	-	+	+	-	-
Miyazaki 2023	-	-	+	+	-	+	-	-
Moriyama 2019	-	-	+	+	-	+	+	-
Reynolds 2015	-	-	+	+	+	+	+	-
Samsky 2019 (patient level)	-	-	+	+	-	+	-	-
Samsky 2019 (hospital level)	×	-	+	+	-	+	-	×
Sud 2017	-	-	+	+	-	+	+	-

Domains:
D1: Bias due to confounding.
D2: Bias due to selection of participants.
D3: Bias in classification of interventions.
D4: Bias due to deviations from intended interventions.
D5: Bias due to missing data.
D6: Bias in measurement of outcomes.
D7: Bias in selection of the reported result.

Judgement
× Serious
- Moderate
+ Low



Table 28 – Characteristics and results of primary studies on COPD

Reference	Setting + design	Population	Intervention and comparator	Outcome
Rinne 2018¹⁵⁶	US 10/2008-9/2011 Veterans Affairs (VA) Cohort 130 hospitals with ≥25 patients Multivariable regression	Veterans admitted for COPD with LoS 1-30-day n=33 558 Excluded patients died during hospitalisation, discharged to a nursing hospital, or transferred to a non-VA hospital,	Short LoS<3d n=13 194; 68.1y, 96.5% female, Medium LoS 3-4d n=10 760; 68.8y, 96.5% female Long LoS>4d n=9604; 69.5y, 96.7% female Hospital LoS (categories <3d, 3d, >3d)	30-day all-cause readmission Short LoS n=2101 (15.9%), medium LoS n=1953 (18.2%), long LoS n= 2061 (21.5%), p<0.001 Short LoS reference Medium LoS aOR 1.39 (95%CI: 1.18-1.63) Long LoS aOR 2.03 (95%CI: 1.72-2.4) Hospital LoS <3d n=1122 (17.5%), 3d n=3809 (18.6%), >3d n=1184 (17.8%) <3d reference 3d aOR 1.12 (95%CI : 0.91-1.38) >3d aOR 1.12 (95%CI: 0.86-2.04) (30-day mortality, n= 710)
Jiang 2018¹⁵⁷	US 2009-2014 Healthcare cost and utilization project Florida state inpatient database Retrospective cohort Multivariable logistic regression	Adults ≥18y admitted with COPD n=268 084	Time trend LoS The mean hospital LoS for COPD index admissions declined significantly from 2009 to 2014 (4.73 days to 4.41 days; p= 0.003), 18-44y 3.46% in 2009 to 2.46% in 2014 46-64y 30.59% in 2009 to 32.19% in 2014 65-84y 53.39% in 2009 to 52.13% in 2014 ≥85y 12.55% in 2009 to 13.22 in 2014	30-day COPD-related readmission rate 8.04% in 2009, 7.79% in 2010, 7.66% in 2011, 7.97% in 2012, 7.61% in 2013, 7.85% in 2014 p=0.434 2009-2014 aOR 0.98 (95%CI: 0.97–0.99), p=0.001 LoS aOR 1.01 (95%CI: 1.01-1.02), p<0.001 <i>Total charge for readmission increased p=0.011 (40,611 dollar to 36,714 dollar), higher for COPD related readmissions than COPD related index admissions</i>



55.38% female in 2009 to
55.6% in 2014 (stable)

aOR adjusted odds ratio, d day(s), COPD chronic obstructive pulmonary disorder, n number, LoS length of stay, US United States of America, VA Veterans Affairs, y year.

Figure 5 – Risk of Bias assessment for non-randomized trials (ROBINS-I) on COPD

		Risk of bias domains							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Rinne 2018								
	Jiang 2018								

Domains:

D1: Bias due to confounding.

D2: Bias due to selection of participants.

D3: Bias in classification of interventions.

D4: Bias due to deviations from intended interventions.

D5: Bias due to missing data.

D6: Bias in measurement of outcomes.

D7: Bias in selection of the reported result.

Judgement

 Moderate

 Low



4 SUPPLEMENT TO CHAPTER 4

4.1 Search strategy

4.1.1 Medline

Date	October 10, 2025	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to October 10, 2025>	
Search strategy		
1	*Length of Stay/	15242
2	*Patient discharge/	18705
3	1 or 2	32763
4	((early or earlier or supported or assisted or premature) adj2 (discharge or discontinuation)).ab,ti,kf.	9981
5	(bed? adj2 (occupancy or utilization or blocking or turnover)).ti,kf.	402
6	((reduc* or limit* or short* or minimiz*) adj3 length of stay).ti,kf.	769
7	4 or 5 or 6	11089
8	3 or 7	41606
9	patient readmission/	26109
10	readmission?.ab,ti,kf.	51662
11	re-admission?.ab,ti,kf.	3354
12	rehospitali#ation?.ab,ti,kf.	9272
13	re-hospitali#ation?.ab,ti,kf.	2373
14	(hospital adj2 return?).ab,ti,kf.	548
15	unscheduled return?.ab,ti,kf.	144
16	10 or 11 or 12 or 13 or 14 or 15	64338
17	9 or 16	69306
18	exp mortality/	445934
19	Life tables/	6695
20	exp Survival Analysis/	349804
21	18 or 19 or 20	743576
22	mortality.ab,ti,kf.	1158104
23	death rate?.ab,ti,kf.	29540
24	death rate?.ab,ti,kf.	29540
25	case fatality rate?.ab,ti,kf.	10293
26	survival rate.ab,ti,kf.	129038
27	mean survival time.ab,ti,kf.	5692
28	life expectancy.ab,ti,kf.	44570
29	years of potential life lost.ab,ti,kf.	654
30	life table?.ab,ti,kf.	10834



31	survival.ab,ti,kf.	1356804
32	(kaplan-meier adj3 (analysis or curve? or estimate? or test? or product-limit? or method?)).ab,ti,kf.	103120
33	cox model?.ab,ti,kf.	16549
34	hazard? model?.ab,ti,kf.	64383
35	22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34	2411698
36	21 or 35	2640720
37	17 or 36	2682424
38	8 and 37	13101
39	Comparative Effectiveness Research/	4159
40	efficiency, organizational/	22899
41	Efficiency/	16260
42	Cost-Effectiveness Analysis/	1580
43	Health Services Research/	39076
44	39 or 40 or 41 or 42 or 43	82478
45	effectiveness.ti,kf.	163828
46	efficient.ti,kf.	109728
47	efficiency.ti,kf.	92739
48	effect on.ti,kf.	65327
49	effect of.ti,kf.	1129590
50	45 or 46 or 47 or 48 or 49	1486968
51	44 or 50	1557861
52	38 and 51	893
53	intervention?.ti,kf.	272868
54	measure?.ti,kf.	161464
55	(policy or policies).ti,kf.	114352
56	protocol?.ti,kf.	125410
57	(home care adj2 (service? or support or program?)).ti,kf.	1990
58	plan?.ti,kf.	236104
59	planning.ti,kf.	101459
60	((community or multidisciplinary or transition or transitionnal or nurse or nursing) adj2 care).ti,kf.	33608
61	remote monitoring.ti,kf.	2866
62	telemonitoring.ti,kf.	1883
63	telehealth.ti,kf.	13782
64	follow-up.ti,kf.	137755
65	patient education.ti,kf.	10811
66	counselling.ti,kf.	7862
67	53 or 54 or 55 or 56 or 57 or 58 or 60 or 61 or 62 or 63 or 64 or 65 or 66	1086060
68	38 and 67	1316



69	exp enhanced recovery after surgery/	2238
70	enhanced recovery after surgery.ti,kf.	3843
71	(enhanced adj3 postchirurgical recover*).ti,kf.	0
72	ERAS.ti,kf.	2986
73	(short stay? adj3 unit?).ti,kf.	204
74	70 or 71 or 72 or 73	5521
75	69 or 74	6024
76	38 and 67	1316
77	"30-day?".ti,kf.	6910
78	8 and 77	399
79	52 or 68 or 76 or 78	2423
80	((systematic review or systematic literature review or systematic scoping review or systematic narrative review or systematic qualitative review or systematic evidence review or systematic quantitative review or systematic meta-review or systematic critical review or systematic mixed studies review or systematic mapping review or systematic cochrane review or "systematic search and review" or systematic integrative review).ti. not comment.pt. not (protocol or protocols).ti. not medline.st.) or (Cochrane Database Syst Rev.ja. and review.pt.) or systematic review.pt.	369452
81	meta-analys*.ti.	243036
82	meta-analysis.pt.	217811
83	exp Technology Assessment, Biomedical/	12848
84	health technology assessment.ti,kf.	3475
85	HtA.ti,kf.	1083
86	80 or 81 or 82 or 83 or 84 or 85	506603
87	79 and 86	154
88	limit 87 to yr="2012-2025"	140
Comments		

4.1.2 Cochrane

Date	13/10/2025 23:33:00	
Database	Cochrane	
Search strategy		
#1	[mh "Length of Stay"[mj]]	514
#2	[mh "Patient discharge"[mj]]	484
#3	#1 or #2	965
#4	((early or earlier or supported or assisted or premature) NEAR/2 (discharge or discontinuation)):ab,ti	3629
#5	(bed? NEAR/2 (occupancy or utilization or blocking or turnover)):ti	6
#6	((reduc* or limit* or short* or minimiz*) NEAR/3 "length of stay"):ti	140
#7	#4 or #5 or #6	3765
#8	#3 or #7	4605

#9	[mh "patient readmission"]	1685
#10	readmission?:ab,ti	9366
#11	re-admission?:ab,ti	1141
#12	rehospitali?ation?:ab,ti	717
#13	re-hospitali?ation?:ab,ti	252
#14	(hospital NEAR/2 return?):ab,ti	164
#15	(unscheduled NEXT/1 return?):ab,ti	24
#16	#10 or #11 or #12 or #13 or #14 or #15	10183
#17	#9 or #16	10665
#18	[mh "mortality"]	18615
#19	[mh "Life tables"]	589
#20	[mh "Survival Analysis"]	29631
#21	#18 or #19 or #20	44364
#22	mortality:ab,ti	95332
#23	(death NEXT/1 rate?):ab,ti	1913
#24	(fatality NEXT/1 rate?):ab,ti	525
#25	"survival rate":ab,ti	9991
#26	"mean survival time":ab,ti	407
#27	"life expectancy":ab,ti	6903
#28	"years of potential life lost":ab,ti	7
#29	(life NEXT/1 table?):ab,ti	910
#30	survival:ab,ti	128640
#31	(kaplan-meier NEAR/3 (analysis or curve? or estimate? or test? or product-limit? or method?):ab,ti	11303
#32	(cox NEAR/1 model?):ab,ti	2613
#33	(hazard? NEAR/1 model?):ab,ti	6517
#34	#22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33	219417
#35	#21 or #34	230302
#36	#17 or #35	236997
#37	#8 and #36	1309
#38	[mh "Comparative Effectiveness Research"]	522
#39	[mh "efficiency, organizational"]	181
#40	[mh "Efficiency"]	640
#41	[mh "Cost-Effectiveness Analysis"]	250
#42	[mh "Health Services Research"]	5695
#43	#38 or #39 or #40 or #41 or #42	6556
#44	effectiveness:ti	64557
#45	efficient:ti	811
#46	efficiency:ti	4341



#47	"effect on":ti	251687
#48	"effect of":ti	228280
#49	#44 or #45 or #46 or #47 or #48	320654
#50	#43 or #49	326017
#51	#37 and #50	136
#52	intervention?:ti	92102
#53	measure?:ti	10201
#54	(policy or policies):ti	1041
#55	protocol?:ti	41687
#56	("home care" NEAR/2 (service? or support or program?):):ti	126
#57	plan?:ti	9668
#58	planning:ti	2648
#59	((community or multidisciplinary or transition or transitionnal or nurse or nursing) NEAR/2 care):ti	1705
#60	"remote monitoring":ti	419
#61	telemonitoring:ti	808
#62	telehealth:ti	1483
#63	follow-up:ti	21554
#64	"patient education":ti	1165
#65	counselling:ti	6279
#66	#52 or #53 or #54 or #55 or #56 or #57 or #58 or #60 or #61 or #62 or #63 or #64 or #65	178620
#67	#37 and #66	181
#68	"30-days":ti or "30-day":ti	514
#69	#8 and #68	19
#70	[mh "enhanced recovery after surgery"]	248
#71	"enhanced recovery after surgery":ti	643
#72	(enhanced NEAR/3 (postchirurgical NEAR/1 recover*)):ti	0
#73	ERAS:ti	581
#74	(short stay? NEAR/3 unit?):ti	20
#75	#71 or #72 or #73 or #74	1027
#76	#70 or #75	1110
#77	#51 OR #67 or #69 or #76	1407
#78	#77 in Cochrane Reviews	6
#79	#78 with Cochrane Library publication date Between Jan 2012 and Oct 2025	5
Comments		

4.1.3 Embase

Date	13 Oct 2025	
Database	Embase	
Search strategy		
#1	'length of stay'/mj	17407
#2	'hospital discharge'/mj	19698
#3	#1 OR #2	36437
#4	((early OR earlier OR supported OR assisted OR premature) NEAR/2 (discharge OR discontinuation)):ab,ti	18492
#5	(bed\$ NEAR/2 (occupancy OR utilization OR blocking OR turnover)):ti	363
#6	((reduc* OR limit* OR short* OR minimiz*) NEAR/3 'length of stay'):ti	1370
#7	#4 OR #5 OR #6	20107
#8	#3 OR #7	53525
#9	'hospital readmission'/de	126611
#10	readmission:ab,ti OR readmission?:ab,ti	101258
#11	're-admission':ab,ti OR 're-admission?':ab,ti	8950
#12	rehospitali?ation:ab,ti OR rehospitali?ation?:ab,ti	21130
#13	're-hospitali?ation':ab,ti OR 're-hospitali?ation?':ab,ti	6505
#14	(hospital NEAR/2 return\$):ab,ti	987
#15	unscheduled AND return\$:ab,ti	486
#16	#10 OR #11 OR #12 OR #13 OR #14 OR #15	119976
#17	#9 OR #16	152020
#18	'mortality'/exp	1634240
#19	'life table'/de	5455
#20	'survival analysis'/de	72990
#21	#18 OR #19 OR #20	1693761
#22	mortality:ab,ti	1742662
#23	'death rate':ab,ti OR 'death rate?':ab,ti	39105
#24	'case fatality rate':ab,ti OR 'case fatality rate?':ab,ti	12619
#25	'survival rate':ab,ti	186072
#26	'mean survival time':ab,ti	8025
#27	'life expectancy':ab,ti	66980
#28	'years of potential life lost':ab,ti	783
#29	'life table':ab,ti OR 'life table?':ab,ti	12395
#30	survival:ab,ti	2058946
#31	'kaplan-meier':ab,ti	237402
#32	'cox model':ab,ti OR 'cox model?':ab,ti	29890
#33	'hazard model':ab,ti OR 'hazard model?':ab,ti OR 'hazard? model':ab,ti OR 'hazard? model?':ab,ti	104571



#34	#22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33	3634198
#35	#21 OR #34	4075355
#36	#17 OR #35	4161950
#37	#8 AND #36	18245
#38	'comparative effectiveness'/de	159509
#39	'organizational efficiency'/de	1561
#40	'cost effectiveness analysis'/de	215476
#41	'health services research'/de	36574
#42	#38 OR #39 OR #40 OR #41	408080
#43	effectiveness:ti	215597
#44	efficient:ti	119743
#45	efficiency:ti	84403
#46	'effect on':ti	82432
#47	'effect of':ti	1206097
#48	#43 OR #44 OR #45 OR #46 OR #47	1701159
#49	#42 OR #48	2039332
#50	#37 AND #49	1304
#51	intervention:ti OR intervention?:ti	306750
#52	measure:ti OR measure?:ti	183743
#53	policy:ti OR policies:ti	83844
#54	protocol:ti OR protocol?:ti	145308
#55	home:ti AND ((care NEAR/2 (service\$ OR support OR program\$)):ti)	2173
#56	plan:ti OR plan?:ti	206401
#57	planning:ti	76471
#58	((community OR multidisciplinary OR transition OR transitionnal OR nurse OR nursing) NEAR/2 care):ti	30243
#59	'remote monitoring':ti	2867
#60	telemonitoring:ti	2192
#61	telehealth:ti	9941
#62	'follow up':ti	185357
#63	'patient education':ti	7815
#64	counselling:ti	8937
#65	#51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64	1222857
#66	#37 AND #65	1730
#67	'30-day':ti OR '30-day?':ti	11118
#68	#8 AND #67	538
#69	'enhanced recovery after surgery'/mj	4443
#70	'short stay unit'/mj	12
#71	#69 OR #70	4455



#72	(enhanced NEAR/3 recovery):ti,kw	10191
#73	eras:ti,kw	4842
#74	('short stay\$' NEAR/3 unit\$):ti,kw	275
#75	#72 OR #73 OR #74	12779
#76	#71 OR #75	13108
#77	#76 AND #37	524
#78	#77 OR #50 OR #66 OR #68	3662
#79	#78 AND ('meta-analysis'/exp OR 'meta-analysis' OR 'systematic review'/exp OR 'systematic review')	275
#80	#79 NOT ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	236
#81	#80 NOT [medline]/lim	44
#82	#81 AND [2012-2025]/py	40
Comments		



4.2 Results

Table 29 – Relevant primary studies included in selected SRs

SR author (yr)	Relevant 1ry studies included in SR	Characteristics of relevant studies
Agarwal (2019) ¹⁵⁸	Panella, 2009; n=429,	China, RCT, n= 101; Diabetic adults, mean age 62. Relevant outcomes: LoS and readmissions (at 12 and 24 weeks).
	Philbin 2000; n=2906	USA, RCT, n=2906; Hospitalised patients, mean age 76. Relevant outcomes: LoS, mortality (at 6 months) and readmissions (at 6 months).
	Sales 2013	USA, RCT, n= 137; Hospitalised patients, mean age 73. Relevant outcomes: readmissions (at 30 days) and all-cause mortality (at 30 days).
	Tu 2009	Canada, RCT, n=17544; median age Hospitalised patients, median age 77. Relevant outcomes included: mortality (at 30 days).
Allen (2014) ¹⁵⁹	Naylor 1990	USA, RCT, n=40; hospitalised patients with chronic illnesses, mean age 78,8. Relevant outcomes: LoS; re-hospitalization (at 12 weeks).
	Lim 2003	Australia, RCT; n=598, acute hospital to home chronic patients, mean age 78. Relevant outcomes: LoS; readmissions only at 6 months.
	McInnes 1999	Australia, RCT; n=364, acute hospital to home geriatric patients, mean age 81. Relevant outcomes: LoS; readmissions only at 6, 12 and 26 months.
	Preen 2005	Australia, RCT; n=189. Hospitalised patients with chronic illnesses, mean age 75. Relevant outcomes: LoS.
	Coleman 2006	USA, RCT; n=747. Hospitalised patients with chronic illnesses, mean age 76. Relevant outcomes: readmissions at 30-days
Austin (2020) ¹⁶⁰	Milani 2011	USA, pre/post; n= 80. Patients with CKD admitted with ACS (excluding palliative). Relevant outcomes: LoS, mortality (only at 90 days).
	Ballesca 2014	USA, retrospective; n= 5879. Adults with principal diagnosis of AMI. Relevant outcomes: LoS and all cause 30 day readmissions.
	Maynard 2014	USA, pre/post; n=190. Adult patients with VTE or receiving therapeutic anticoagulation on inpatient medical/surgical services. Relevant outcomes: LoS, all cause readmission at 30 days.
Berkovic (2023) ¹⁶¹	RCTs: Petersen 2006, Reilly 2005; Registry: Berg 2018; interrupted time series: Alvis 2021, Azam 2022, Chung 2021, de Carvalho Almeida 2021, Didden 2019, Gwynne-Jones 2017, Harkouk 2021, Joo 2022, Khan 2014, Larsen 2008, Malviya 2011, Picart 2021, Raphael 2011, Stambough 2015, Starks 2014, Stowers 2016, Tasso 2022, Taylor	Australia, MA of 2 RCTs: 1 from Denmark, 1 from the UK, n=98. 1 registry based study from Sweden, n=13910, MA of 21 interrupted time series in different countries, including European countries (Denmark, France, Italy, Netherlands, UK) n=25893, 1 observational (other) from Spain, n=6146. Adult patients undergoing joint replacement surgery. Relevant outcomes: Readmissions at maximum 90 days.

	2022, Yanik 2018; Observational (other): Ripolles,- Melchor 2020	
	Registries: Berg 2018, Berg 2021; Interrupted time series: Azam 2022, de Carvalho Almeida 2021, Gwynne-Jones 2017, Khan 2014, Larsen 2008, Malviya 2011, Picart 2021, Starks 2014, Stowers 2016, Tasso 2022, Taylor 2022, Yanik 2018; Observational (other): Jiang 2019, Ripolles,- Melchor 2020, Slim 2022	Australia, MA of 2 Australian registries, n=130441, MA of 9 interrupted time series in different countries, including European countries (3 UK, 1 France, 1 Italy), n=20289, MA of 3 observational (others), 1 from China, 1 from Spain and 1 from France; n=48555. Adult patients undergoing joint replacement surgery. Relevant outcomes: Mortality at maximum 90 days
Chakraborty (2020)¹⁶²	Wexler 2012	USA, RCT, n=31. Adult inpatients with T2DM and HbA1c > 7.5% (58 mmol/mol) admitted for reasons other than diabetes to an academic medical centre. Mean age 52,9 usual care 57.2 intervention. Relevant outcomes: LoS, 30 day readmission.
	Hardee 2015	USA, quasi experimental, n=19471. Patients diagnosed with diabetes. Relevant outcomes: LoS, 30-day readmissions.
	Flanagan 2009	UK, quasi experimental, n=28022. Hospitalised patients with diabetes, mean age: 62.5 (±18.6) in 2001, 66.4 (±18.1) in 2006. Relevant outcomes: LoS
	Schnipper, 2008	Canada, pre/post; n=169. Patients with type 2 diabetes or inpatient hyperglycaemia, mean age 63 (pre) 64.7 (post). Relevant outcomes: LoS
Coffey (2019)¹⁶³	Goldman 2014	USA, RCT, n= 699. Patients admitted unexpectedly to the internal or family medicine, cardiology, or neurology departments. Likely to be discharged home and able to consent. Relevant outcomes: readmissions at 30-days. Mortality only at 180 days.
	Dizon 2017	USA, pre/post study, no info on sample size. Patients who might benefit from a person centred intervention or at high risk for readmission. Outcomes considered: Readmissions at 30 days.
	Wong, 2005	China, RCT, n= 101; Diabetic Adults with diabetes, mean age 62yrs. Outcomes considered included: LoS and readmissions (at 12 and 24 weeks).
	Dawes 2007 :	Scotland, RCT and economic evaluation, n=111. Adult women with benign gynaecological disease. Outcomes measured included LoS and readmissions within 6 weeks.
	Alshabanat 2017	Canada, non-randomised trial, n=1564. COPD hospitalised patients. Relevant outcomes: LoS, 30-day readmissions.
	Blum 2014	USA, RCT, n=204. Adults (n=204). Patients that had been hospitalised with HF, recruited from HF services at medical centres and several private cardiology practices in the Baltimore/Washington DC area. Relevant outcomes: LoS, 30-days readmissions, 30-days mortality.
Coolsen (2013)¹⁶⁴	Berberat 2007	Germany, retrospective case series, n=255. Patients undergoing pancreaticoduodenectomy, total pancreatectomy, distal pancreatectomy, segmental pancreatectomy or duodenum preserving pancreatic head resection. Relevant outcome: LoS.
	DiSebastiano 2011	Italy, retrospective case series, n=145. Patients undergoing pancreaticoduodenectomy, total pancreatectomy or distal pancreatectomy. Relevant outcome: LoS.
	Kennedy 2009	USA, case control study, n=112. Adults undergoing distal pancreatectomy. Relevant outcome: LoS.
	Robertson 2012	UK, prospective case series, n=50. Adults undergoing pylorus-preserving pancreaticoduodenectomy or pancreaticoduodenectomy. Relevant outcome: LoS and readmissions at 28 days.

	Porter 2000	USA, case series, n=80. Adults undergoing pancreaticoduodenectomy. Relevant outcome: LoS.
	Sahota 2017	UK, RCT, n=250. Adults aged ≥70 years admitted to hospital as an acute medical emergency. Relevant outcomes: LoS
	Vanounou 2007	USA, case series, n=145. Adults undergoing pancreaticoduodenectomy. Relevant outcome: LoS.
	Kennedy 2007	USA, case series, n=91. Adults undergoing pancreaticoduodenectomy. Relevant outcome: LoS.
	Balzano 2008	Italy, case series, n=252. Adults undergoing pylorus-preserving pancreaticoduodenectomy or pancreaticoduodenectomy. Relevant outcome: LoS
	Balzano 2008, Porter 2000, Vanounou 2007, Kennedy 2007	Netherlands, MA of 4 case controlled studies: 3 from the USA and 1 from Italy, n=744. Adult patients undergoing major elective resectional surgery of the pancreas. Relevant outcomes: 30-day readmission, 30 day mortality
Deng (2018)¹⁶⁵	Pedersen 2008, Yang 2016, Stambough 2015, Talboys 2016, Maempel 2016, Gromov 2015, Macfie 2012, Olsson 2014, den Hertog 2012, Auyong 2012, Pamilo 2018, Christelis 2015, Stowers 2016, Nielsen 2010	MA of 15 studies (8 RCTs), n=9209. 4 of these conducted in the UK, 3 in Denmark, 2 in the USA, 1 in Australia, 1 in Finland, 1 in Germany, 1 in New Zealand and 1 in Sweden. Patients who underwent total hip arthroplasty (THA) or total knee arthroplasty (TKA). Relevant outcome: LoS
	Auyong 2015, Gwynne-Jones 2017, Christelis 2015, Stowers 2016, Malviya 2011, Stambough 2015	MA of 6 studies, (3 RCTs) n=7465. 2 of these conducted in New Zealand, 2 in the USA, 1 in Australia and 1 in the UK. Patients who underwent total hip arthroplasty (THA) or total knee arthroplasty (TKA). Relevant outcome: 30-day readmissions.
	Malviya 2011, Maempel 2016, Macfie 2012, Pamilo 2018	MA of 4 observational studies, n=8169. 3 of these conducted in the UK and 1 in Finland. Patients who underwent total hip arthroplasty (THA) or total knee arthroplasty (TKA). Relevant outcome: mortality (unclear time frame).
Doshmangir (2022)¹⁶⁶	Moher 1992	Canada, RCT, n=267. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS
	Kennedy 1987	USA, RCT, n=80. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS (readmissions only at 8 weeks).
	Hegney 2006	USA, pre/post, n=2139. All men and women over 70 years of age who presented to the ED during the study period (October 2002 to June 2003). Relevant outcomes: LoS, readmissions at 28 days.
	Styrborn 1995	Sweden, RCT n=536. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS.
	Sandberg 2015	Sweden, RCT, n=153. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS.
	Joo 2014	USA, Longitudinal study, n=252. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS..

	Tadros 2012	USA, pre/post, n=51 No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS..
	Mahendran	Singapore, pre/post, n=227. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS..
	Cardiff 1997	Canada, time series, n=1790. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS..
	Woodside 1991	USA, case control, n=264 No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: LoS..
	Koehler 2009	USA, RCT, n=41. No detail offered on specific patient population (SR on adult hospitalised patients). Relevant outcome: 30-day readmissions.
Ellis (2017)¹⁶⁷	Asplund 2000, Cohen 2002 GEMC, Cohen 2002 UCOP, Edmans 2013, Fretwell 1990, Goldberg 2013, Harris 1991, Hogan 1987, McVey 1989, Naughton 1994, Nikolaus 1999, Nikolaus 1999 plus ESD, Saltvedt 2002, Somme 2010, Thomas 1993, Wald 2011, Winograd 1993	UK, MA of 17 RCTs, n=5303. Most primary studies performed in North America (USA and Canada). Patients admitted to hospital for acute care or inpatient rehabilitation after an acute admission with medical, psychological, functional, or social problems, ≥65 yrs. Relevant outcome: LoS
	Asplund 2000, Barnes 2012, Counsell 2000, Edmans 2013, Goldberg 2013, Kircher 2007, Landefeld 1995, Nikolaus 1999, Nikolaus 1999 plus ESD, Rubenstein 1984, Saltvedt 2002, Wald 2011, White 1994	UK, MA of 13 RCTs (n=6698). Most primary studies performed in North America (USA and Canada). Patients admitted to hospital for acute care or inpatient rehabilitation after an acute admission with medical, psychological, functional, or social problems, ≥65 yrs. Relevant outcome: 30-day readmission
Fox (2012)¹⁶⁸	Asplund 2000, Barnes 2012, Counsell 2000, Covinsky 1997, Fretwell 1990, Gonzalez-Montalvo 2010, Harris 1991, Olofsson 2007, Stewart 1999, Vidan 2009, Zelada 2009	Canada, MA of 11 studies, (5 RCTs), n= 6098. 5 of these studies were completed in the USA, 2 in Spain, 2 in Sweden, 1 in Australia and 1 in Peru. SR on acutely ill or injured adults, mean age 81. Relevant outcome: LoS
	Asplund 2000, Barnes 2012, Counsell 2000, Landefeld 1995, Olofsson 2007	Canada, MA of 5 RCTs, n=3983. 3 of these studies were completed in the USA and 2 in Sweden. SR on acutely ill or injured adults, mean age 81. Relevant outcome: 30-days re-admissions.
Fox (2013)¹⁶⁹	Choong 2000, Kennedy 1987, Kleinpell 2004, Lin 2009, Naughton 1994, Naylor 2004, Rich 1993	Canada, MA of 7 studies (5 RCTs), n=789. 5 of these were completed in the USA, 1 in Australia and 1 in Taiwan. In-patients over 65 years, during the acute phase.
	Choong 2000	Australia, prospective, pseudorandomised, controlled trial.(n=111). Patients admitted via the ED with a primary diagnosis of fractured neck of femur. Relevant outcomes: LoS and 28-days readmissions.
Gonçalves-Bradley (2022)¹⁷⁰	Moher 1992, Naughton 1994, Naylor 1994, Harrison 2002, Rich 1993, Rich 1995, Preen 2005, Sulch 2000, Laramée 2003, Lindpaintner 2013, Gillespie 2009	UK, MA of 11 RCTs (n=2113). 5 of these were conducted in the USA, 2 in Canada, 1 in Australia, 1 in Sweden, 1 in Switzerland and 1 in the UK. Patients aged ≥65 admitted to hospital with a medical condition. Relevant outcome: LoS
	Naylor 1994, Lin 2009	UK, MA of 2 RCTs (n=184). 1 from the USA and 1 from Taiwan. Patients aged ≥65 admitted to hospital for surgery. Relevant outcome: LoS
	Bonetti 2018 (n=104)	Brazil, RCT (n=133). Patients aged ≥18 years admitted to a specialised cardiology ward due to stable angina, acute coronary syndrome, congestive heart failure, valvular disease, arrhythmias, or hypertension, mean age: 65 yrs. Relevant outcome: Hospital readmission at 30-days.

	Farris 2014 (n=624)	USA, RCT (n=631). Adults, admitted with diagnosis of hypertension, hyperlipidaemia, HF, coronary artery disease, MI, stroke, TIA, asthma, COPD or receiving oral anticoagulation, with life expectancy of e 6 months and without cognitive impairment, dementia or severe psychiatric diagnosis, mean age 61. Relevant outcome: readmissions at 30 days.
	Goldman 2014 (n=698):	USA, RCT n= 699. Patients admitted unexpectedly to the internal or family medicine, cardiology, or neurology departments. Likely to be discharged home and able to consent. Relevant outcomes: readmissions at 30-days. Mortality only at 180 days.
	Lisby 2019 (n=200):	Denmark, RCT n=200. Adults admitted to the AMU with non-surgical medical conditions, with at least one hospitalisation in the past 12 months, living in the catchment area and eligible for post-discharge follow- up. Mean age: 60.3 years (intervention), 61.7 (control). Relevant outcome: 30 days readmissions.
	Evans 1993	USA, RCT n=835. Patients admitted with a medical condition, neurological condition, or recovering from surgery. Mean age: 66.6 (intervention), 67.9 (control). Relevant outcome: Readmissions at 30 days.
Guerin (2013)¹⁷¹	Hegney 2006	Australia, pre/post, n=2139. Patients ≥70+ years, admitted to the ED, identified as needing community support upon discharge. Relevant outcomes: LoS, 30-day readmissions.
	Ornstein 2011	USA, pre/post, n=532. Patients ≥65, enrolled in the Mount Sinai's Visiting Doctors Program. Relevant outcomes: LoS, 30-day readmissions.
Harij (2024)¹⁷²	Saurabh 2020, Gonenc 2014, Mohsina 2018, Sharma 2021	UK, MA of 4 RCTs, n=316. 3 of these conducted in India and 1 in Turkey. Adults undergoing emergency abdominal surgery. Relevant outcomes: LoS.
	RCTs: Saurabh 2020, Gonenc 2014, Mohsina 2018, Sharma 2021, Pranavi 2022. Observational: Liska 2019, Lohsiriwat 2014, Vinas 2020, Wisley 2015	UK, MA of 5 RCTs, n=451. 4 completed in India and 1 in Turkey. MA of 5 observational studies, n=1520. 1 in Australia, 1 in China, 1 completed in Spain, 1 in Thailand and 1 in the USA. Adults undergoing emergency abdominal surgery. Relevant outcomes: 30-day readmissions
	RCTs: Gonenc 2014, Mohsina 2018, Sharma 2021, Vester-Andersen 2015. Observational: Agarwal 2019, Huddart 2014, Jordan 2020, Liska 2019, Moiler 2011, Shang 2018, Tenburg 2017, Trangbaek 2022, Vinas 2020, Wisley 2015	UK, MA of 4 RCTs, n=535. 2 of these conducted in India, 1 in Turkey and 1 in Denmark. MA of 10 observational studies, n=20132. 3 conducted in Denmark, 3 in the UK, 1 in Spain, 1 in the USA, 1 in Australia and 1 in China. Adults undergoing emergency abdominal surgery. Relevant outcomes: 30-day mortality
Heymans (2022)¹⁷³	Auyong 2015, Basques 2017, Bovonratwet 2017a, Bovonratwet 2017b, Courtney 2018, Courtney 2017, Dowsey 1999, Gauthier-Kwan 2018, Goyal 2017, Gwynne-Jones 2017, Huang 2017, Ismail 2016, Klingenstein 2017, Kolisek 2009, Kort 2017, Larsen 2017, Lovecchio 2016, Malviya 2011, Nelson 2017, Pamilo 2018, Renkawitz 2010, Richter 2017, Wilches 2017	Netherlands, 38 studies (5 RCTs), non-meta-analysed. n= 11571342. 19 of these conducted in the USA, 4 in the Netherlands, 3 in Canada, 3 in Germany, 2 in Spain, 1 in Australia, 1 in Denmark, 1 in Finland, 1 in Italy, 1 in Malaysia, 1 in New Zealand and 1 in the UK. Relevant outcomes: LoS
	Auyong 2015, Basques 2017, Bovonratwet 2017a, Bovonratwet 2017b, Courtney 2018, Courtney 2017, Dowsey 1999, Gauthier-Kwan 2018, Goyal 2017, Gwynne-Jones 2017, Huang 2017, Ismail 2016, Klingenstein 2017, Kolisek 2009, Kort 2017, Larsen 2017, Lovecchio 2016, Malviya 2011,	Netherlands, MA of 24 studies (2 RCT), n=416013.12 of these conducted in the USA, 2 in Canada, 1 in Australia, 1 in Denmark, 1 in Finland, 1 in Germany, 1 in Malaysia, 1 in the Netherlands, 1 in New Zealand, 1 in Spain and 1 in the UK. Patients undergoing hip and/or knee arthroplasty. Relevant outcomes: readmissions (time frame not specified).

	Nelson 2017, Pamilo 2018, Renkawitz 2010, Richter 2017, Wilches 2017	
Huntley (2016) ¹⁷⁴	Blue 2001, Laramée 2003, Rich 1993, Rich 1995, Riegel 2000, Riegel 2002, Riegel 2006, Stewart 1999, Stewart 2012	UK, MA of 9 studies (8 RCTs), n=1765; 6 from the USA, 2 from Australia and 1 from the UK. Adults with HF diagnosis. Relevant outcome: LoS.
	Stauffer 2011	USA, pre/post n=140. Patients ≥65 discharged from hospital with a principal diagnosis of HF. Mean age: 78.9 (intervention), 81.4 (control). Relevant outcome: 30-days readmissions.
	Russell 2011	USA, observational n=447. High-risk heart failure patients, mean age: 79.4 (intervention), 79.9 (control). Relevant outcome: 30-day readmissions.
Kalogera (2019) ¹⁷⁵	Keil 2018	USA, prospective cohort study, n=255. Patients undergoing laparoscopic or robot-assisted hysterectomy. Relevant outcomes: LoS, 30-day readmissions
	Clemente 2016	UK, prospective cohort, n=254. Patients undergoing laparoscopic hysterectomy. Relevant outcomes: LoS.
	Lambaudie 2017	France, prospective cohort, n=175. Patients undergoing laparoscopic or robot-assisted hysterectomy plus pelvic/para-aortic lymphadenectomy. Relevant outcomes: LoS, 30-day readmissions
	Chapman 2016	USA, retrospective cohort, n=165. Recovery after minimally invasive gynaecologic procedures with bowel surgery. Relevant outcomes: LoS, 30-day readmissions
	Myriokefalitaki 2016	UK, prospective cohort, n=57. Patients undergoing laparoscopic (including radical hysterectomy). Relevant outcomes: LoS.
	Modesitt 2016	USA, retrospective study cohort, n=573. Patients undergoing hysterectomy. Relevant outcomes: LoS, 30-day readmissions
	Johnston 2015	UK, retrospective study, n=127. laparoscopic hysterectomy. Relevant outcomes: LoS, 30-day readmissions
	Ali 2015	UK, retrospective study, n=50. Patients undergoing laparoscopic hysterectomy. Relevant outcomes: LoS.
	Minig 2015	Spain, prospective cohort, n= 88. Patients undergoing laparoscopic hysterectomy with/without (bilateral) salpingo-oophorectomy. Relevant outcomes: LoS.
	Dinesen 2015	Denmark, prospective cohort, n=22. Patients undergoing robot-assisted hysterectomy and (bilateral) salpingo-oophorectomy. Relevant outcomes: LoS.
	Kent 2012	Prospective cohort, n=376. Patients undergoing laparoscopic hysterectomy. Relevant outcomes: LoS.
	Kondo 2013	Brazil, retrospective study, n=161. Patients undergoing laparoscopy for complete treatment of intestinal deep infiltrative endometriosis. Relevant outcomes: LoS.
	Zhao 2014, Wang 2015, Chen 2016, Li 2017, Zhang 2017, Shen 2022	Ireland. MA of 6 RCTs, n=850. All from China. Patients undergoing oesophagectomy. Relevant outcomes: LoS
Kennelly (2025) ¹⁷⁶	Chen 2016, Shen 2022	Ireland. MA of 2 RCTs, n=328. Both studies from China. Patients undergoing oesophagectomy. Relevant outcomes: 30-day readmissions.
	Chen 2016, Li 2017, Zhang 2017	Ireland. MA of 3 RCTs, n=492. All studies from China. Patients undergoing oesophagectomy. Relevant outcomes: short-term mortality.
Kuemmerli (2024) ¹⁷⁷	Balzano 2008, Braga 2014, Coolsen 2014, Daniel 2018, Hwang 2019, Kagedan 2017, Lavu 2019, Lof 2020, Nussbaum 2015, Passeri 2020, Sutcliffe	International. MA of 14 studies (2 RCTs), n=1109. 4 from the USA, 2 from Italy, 2 from the Netherlands, 2 from the UK, 1 from Canada, 1 from Greece, 1 from South Korea and 1 from Sweden. Patients undergoing pancreatoduodenectomy. Relevant outcomes: LoS and mortality at 30 days.

	2015, van der Kolk 2017, Williamsson 2015, Zouros 2016	
	Braga 2014, Coolen 2014, Daniel 2018, Hwang 2019, Lof 2020, Nussbaum 2015, Williamsson 2015,	International. MA of 7 studies (2 RCTs), n=571. 2 studies from the USA, 1 from Italy, 1 from the Netherlands, 1 from South Korea, 1 from Sweden and 1 from the UK. Patients undergoing pancreatoduodenectomy. Relevant outcomes: 30-day readmissions.
Kuemmerli (2022)¹⁷⁸	Balzano 2008, Braga 2014, Coolen 2014, Nussbaum 2015, Partelli 2016, Pillai 2014, Sutcliffe 2015, Williamson 2015, Zouros 2016, Daniel 2018, Kagedan 2017, Su 2017, Hwang 2019, Lavu 2019, Lof 2020, Passeri 2020	International. MA of 16 studies (2 RCTs), n= 2996. 4 pursued in the USA, 3 in Italy, 2 in the UK, 1 in Greece, 1 in the Netherlands, 1 in Sweden, 1 in Canada, 1 in China, 1 in India and 1 in Korea. Patients undergoing pancreatoduodenectomy (PD), classical or pylorus-preserving PD, for any indication. Relevant outcomes: LoS
	Only pooled results shown on readmissions. Primary studies included in the MA not specified	International. MA of 14 studies (mainly observational), n=NA. Patients undergoing pancreatoduodenectomy (PD), classical or pylorus-preserving PD, for any indication. Relevant outcomes: readmissions
	Only pooled results shown on readmissions. Primary studies included in the MA not specified	International. MA of 16 studies (mainly observational), n= NA. Patients undergoing pancreatoduodenectomy (PD), classical or pylorus-preserving PD, for any indication. Relevant outcomes: mortality
Mabire (2017)¹⁷⁹	Askim 2004, Courtney 2009, Dedhia 2010, Koehler 2009, Lim 2004, Arbaje 2010	Switzerland, MA of 6 studies (4 RCTs), n=1731. 3 from the USA, 2 in Australia and 1 in Norway. Patients ≥65 years, discharged home from an acute care or a post-acute care rehabilitation setting, i.e. skilled nursing facility. Relevant outcome: LoS
	Dedhia 2019	USA, pre/post, n=185. Patients aged 65 and older admitted to the hospitalist services. Relevant outcomes: LoS (included in MA), 30-day readmissions.
	Kwok 2005	China, RCT n=157: Hospitalised patients aged ≥60 with a primary diagnosis of chronic lung disease and at least one hospital admission in the previous 6 months. Relevant outcome: 30-day readmissions.
Malczak (2017)¹⁸⁰	Lemanu Mannaerts, Proczko, Dogan, Cooney, Campillo-Soto, Geubbels, Barreca, Ronellenfisch, Pimenta	Poland, MA of 10 studies (2 RCTs), n=3657. 3 of these conducted in the Netherlands, 1 in Brazil, 1 in Germany, 1 in New Zealand, 1 in Poland, 1 in Spain, 1 in the UK and 1 in the USA. Bariatric surgery patients. Relevant outcomes: LoS
	Campillo-Soto, Cooney, Dogan, Geubbels, Lemanu, Mannaerts, Petrick, Proczko, Ronellenfisch	Poland, MA of 9 studies (1 RCT), n=5007. 3 of these conducted in the Netherlands, 2 in the USA, 1 in Germany, 1 in New Zealand, 1 in Poland and 1 in Spain. Bariatric surgery patients. Relevant outcomes: readmissions. No timeframe provided.
	No information on primary studies for this outcome. Only pooled data presented.	Poland, MA of 8 studies, n=316. Most conducted in Europe. Bariatric surgery patients. Relevant outcomes: mortality, no timeframe provided
Mao (2022)¹⁸¹	Chen 2018, Courtney 2009, Huang 2005, Shyu 2005, Shyu 2010	China, MA of 5 RCTs (n=647). 3 of these conducted in Taiwan, 1 in Australia and 1 in China. Adult surgical patients discharged from hospital to home for no long term conditions, age: 18-80. Relevant outcomes: LoS
	Cajandin 2017, Hu 2020, Pan 2020, Shyu 2005	China, MA of 4 RCTs (n=591). 2 of these conducted in China, 1 in the Philippines and 1 in Taiwan. Adult surgical patients discharged from hospital to home for no long term conditions, age: 18-80. Relevant outcomes: 30-days readmissions
Malik (2018)¹⁸²	Basic 2005	Australia, RCT n=224. Elderly patients coming to a hospital ED. Relevant outcomes: LoS
	Gagnon 1999	Canada, RCT n=427. Frail older people (≥ 70 years of age and at risk for repeated hospital admissions) discharged home from the ED. Relevant outcomes: LoS

	Rosted 2013, Runciman 1996	MA of 2 RCTs, n=493. One Scottish study and one Danish. Elderly hospitalised patients at risk of hospital readmission. Relevant outcomes: 30-day readmissions.
	Caplan 2004	Australia, RCT, n=739. Patients aged ≥75, discharged home from ED: Relevant outcomes: 30-day readmissions.
	Hegney 2006	Australia, pre/post, n=2139. Patients ≥70+ years, admitted to the ED, identified as needing community support upon discharge. Relevant outcomes: LoS, 30-day readmissions.
McKechie (2024)¹⁸³	Gonenc 2014, Mohsina 2018, Chandan 2019, Masood 2021, Pranav 2022, Saurabh 2020, Sharma 2021.	Canada. MA of 7 RCTs, n=554. 5 from India, 1 from Pakistan and 1 from Turkey. Patients undergoing emergency intra-abdominal surgery. Relevant outcomes: LoS.
	Gonenc 2014, Mohsina 2018, Chandan 2019, Pranavi 2022, Saurabh 2020, Sharma 2021, Nechay 2021	Canada. MA of 7 RCTs, n=710. 5 from India, 1 from Russia and 1 from Turkey. Patients undergoing emergency intra-abdominal surgery. Relevant outcomes: 30-day readmissions..
	Gonenc 2014, Mohsina 2018, Chandan 2019 Massod 2021.	Canada. MA of 4 RCTs, n=267. 2 from India, 1 Pakistan and 1 from Turkey. Patients undergoing emergency intra-abdominal surgery. Relevant outcomes: short-term mortality.
Morrel (2021)¹⁸⁴	Füssenich 2020	Germany, non randomised study, n=360. Patients undergoing total hip arthroplasty. Relevant outcomes: LoS
	Gulotta 2011	USA, non randomised study, n=283. Patients undergoing total hip arthroplasty. Relevant outcomes: LoS, readmissions.
	Jiang 2019	China, non randomised study, n=247. Patients undergoing total knee arthroplasty. Relevant outcomes: LoS
	Larsen 2008	Denmark, non randomised study, n=247. Patients undergoing total hip or total knee arthroplasty. Relevant outcomes: LoS, readmissions.
	Ripollés-Melchor 2020	Spain, non randomised study, n=6146. Patients undergoing total hip or total knee arthroplasty. Relevant outcomes: LoS, readmissions.
	Tan 2018	Australia, non randomised study, n=230. Patients undergoing total hip arthroplasty. Relevant outcomes: LoS
	Den Hertog 2012	Germany, RCT, n=147. Patients undergoing total knee arthroplasty. Relevant outcomes: LoS
	Fransen 2018	Netherlands, RCT, n=50. Patients undergoing total knee arthroplasty. Relevant outcomes: LoS
	Petersen 2006	Denmark, RCT, n=79. Patients undergoing total hip arthroplasty. Relevant outcomes: LoS, readmissions.
Nair (2023)¹⁸⁵	Demouron 2022, Wang 2017, Kamel 2020, Nechay 2021, Akhtar 2020, Zhang 2020	Oman, India and UK, MA of 6 studies (4 RCTs), n=1489. 2 conducted in China, 1 in Egypt, 1 in France, 1 in Pakistan and 1 in Russia. Patients Undergoing Laparoscopic Cholecystectomy With and Without Common Bile Duct Exploration. Relevant outcomes: LoS
	Demouron 2022, Wang 2017, Kamel 2020, Nechay 2021, Akhtar 2020	Oman, India and UK, MA of 5 studies, (4 RCTs) n=1044. 1 conducted in China, 1 in Egypt, 1 in France, 1 in Pakistan and 1 in Russia. Patients Undergoing Laparoscopic Cholecystectomy With and Without Common Bile Duct Exploration. Relevant outcomes: 30-day readmissions
Naseralallah et al. 2024¹⁸⁶	Alsheikh 2020, Bansal 2019, Butt 2019, Elnour 2022, Fitzpatrick 2023, Han 2022, Hyland 2020, Kwiatkowski 2021, Shang 2021, Smith 2023, Zhou 2023	Qatar/UK. MA of 11 studies (3 RCTs), n=4905. 5 from the USA, 2 from the UK, 2 from China, 1 from Pakistan and 1 from Sudan. Patients undergoing different types of surgery including: 8 studies on orthopaedic surgery, 5 on general surgery, 3 on bariatric surgery, 2 on cardiothoracic surgery, 2 on transplant surgery and 5 studies on multiple surgical units. Relevant outcomes: LoS

	Alsheikh 2020, Bansal 2019, Falconer 2021, Hyland 2020, Smith 2023, Van Prooyen 2023, Yang 2019, Zhou 2023.	Qatar/UK. MA of 8 studies(2 RCTs), n=3271. 5 studies from the USA, 2 from China and 1 from the UK. Patients undergoing different types of surgery including: 8 studies on orthopaedic surgery, 5 on general surgery, 3 on bariatric surgery, 2 on cardiothoracic surgery, 2 on transplant surgery and 5 studies on multiple surgical units. Relevant outcomes: 30-day readmissions.
Noba (2023) ¹⁸⁷	Balzano 2008, Braga 2014, Coolsen 2014, Dai 2017, Deng 2017, French 2009, Hilal 2013, Hwang 2019, Joliat 2015, Kagedan 2017, Kennedy 2007, Kobayashi 2014, Kowalsky 2019, Morales Soriano 2015, Nikfarjam 2013, Nussbaum 2015, Partelli 2016, Pillai 2014, Shah 2016, Shao 2015, Su 2017, Sutcliffe 2015, Takagi 2019, Téoule 2020, Tremblay St Germain 2017, Kolk 2017, Vanounou 2007, Williamsson 2015, Williamsson 2019, Zhu 2020, Zouros 2016	UK, MAs on 31 studies (3 RCTs), n=5382. 14 of these conducted in Europe, 10 in Asia, 6 in North America and 1 in Australia. Patients undergoing pancreaticoduodenectomy. Relevant outcome: LoS,
	Balzano 2008, Braga 2014, Coolsen 2014, Dai 2017, Deng 2017, Hilal 2013, Hwang 2019, Joliat 2015, Kagedan 2017, Kennedy 2007, Kobayashi 2014, Kowalsky 2019, Morales Soriano 2015, Nussbaum 2015, Partelli 2016, Pillai 2014, Shah 2016, Shao 2015, Su 2017, Sutcliffe 2015, Takagi 2019, Téoule 2020, Tremblay St Germain 2017, Kolk 2017, Vanounou 2007, Williamsson 2019, Zhu 2020, Zouros 2016	UK, MAs on 28 studies (3 RCTs), n= 5101, 12 of these conducted in Europe, 10 in Asia and 6 in North America. Patients undergoing pancreaticoduodenectomy. Relevant outcome: readmissions,
	Balzano 2008, Braga 2014, Coolsen 2014, Dai 2017, Deng 2017, French 2009, Hilal 2013, Hwang 2019, Joliat 2015, Kagedan 2017, Kennedy 2007, Kobayashi 2014, Kowalsky 2019, Morales Soriano 2015, Nussbaum 2015, Partelli 2016, Pillai 2014, Shah 2016, Shao 2015, Su 2017, Sutcliffe 2015, Takagi 2019, Téoule 2020, Tremblay St Germain 2017, Kolk 2017, Vanounou 2007, Williamsson 2015, Williamsson 2019, Zhu 2020, Zouros 2016	UK, MAs on 30 studies (3 RCTs), n= 5341. 14 of these conducted in Europe, 10 in Asia and 6 in North America. Patients undergoing pancreaticoduodenectomy. Relevant outcome: mortality.
Noba (2020) ¹⁸⁸	Clark 2016, Dasari 2015, Day 2015, Ding 2018, Ding 2018, Jing 2018, Joliat 2016, Kaibori 2017, Lagbaa 2016, Lin 2011, Ma 2018, Ovaere 2017, Page 2016, Savikko 2015, Stoot 2009, Sutherasan 2017, Sánchez-Pérez 2012, Teixeira 2019, Thomblade 2018, Van Dam 2008, Zhu 2014, He 2015, Jones 2013, Liang 2016, Liang 2018, Ni 2013, Qi 2018	UK, MA of 27 studies (6 RCTs), n=3739. 13 of these were conducted in Asia, 4 in the USA, 1 Brazil and 8 in Europe (3 in the UK, 2 Switzerland, 1 in Belgium, 1 in Finland, 1 in the Netherlands and 1 in Spain. Adults undergoing liver surgery. Relevant outcomes: LoS.

	Clark 2016, Dasari 2015, Day 2015, He 2015, Jing 2018, Joliat 2016, Jones 2013, Lagbaa 2016, Liang 2016, Liang 2018, Lin 2011, Ni 2013, Ovaere 2017, Page 2016, Qi 2018, Savikko 2015, Sánchez-Pérez 2012, Stoot 2009, Thomblade 2018, Van Dam 2008, Zhu 201	UK, MA of 21 studies (6 RCTs), n=2878. 8 of these conducted in China, 4 in the USA, 3 in the UK, 2 Switzerland, 1 in Belgium, 1 in Finland 1 in the Netherlands and 1 in Spain. Adults undergoing liver surgery. Relevant outcomes: readmissions.
	Clark 2016, Dasari 2015, Day 2015, Ding 2018, Ding 2018, He 2015, Jing 2018, Joliat 2016, Jones 2013, Kaibori 2017, Lagbaa 2016, Liang 2016, Liang 2018, Lin 2011, Ma 2018, Ni 2013, Ovaere 2017, Qi 2018, Savikko 2015, Stoot 2009, Sutherasan 2017, Sánchez-Pérez 2012, Teixeira 2019, Van Dam 2008, Zhu 2014.	UK, MA of 25 studies, (6 RCTs), n=3343. 13 of these were conducted in Asia, 2 in the USA, 1 Brazil and 9 in Europe (3 in the UK, 2 Switzerland, 1 in Belgium, 1 in Finland, 1 in the Netherlands and 1 in Spain). Adults undergoing liver surgery. Relevant outcomes: mortality.
Pang (2024)¹⁸⁹	Carpenter 2015	USA, observational, n=359. Patients with heart failure. Relevant outcomes: LoS,
	Pang 2024	USA, RCT, n=193. Adults with planned admission for decompensated HF and previous history of HF. Relevant outcomes: LoS, 30-days readmissions, 30-days mortality.
	Storrow 2005	USA, observational, n= 64. Adults with planned admission for HF, mild based on Framingham criteria; BNP > 100. Relevant outcomes: LoS, 30-day readmissions, 30-days mortality.
	Al-Saffar 2018	USA, observational, n= 126. Patients with mild HF exacerbation. Relevant outcomes: 30-day readmissions.
Pannick (2015)¹⁹⁰	Cole 2002, Pitkälä 2006, Lai 2009, Solomon 2001, Desan 2011, Korbkitjaroen 2011, Curley 1998, Mudge 2006, O'Leary 2010, O'Leary 2011, Wald 2011, Auerbach 2012, Saint 2013	UK, MAs on 13 studies (6 RCTs), n=66 548. Mostly from the USA, but also from Australia, Canada, Finland and Thailand. Adult patients (aged ≥ 18 years) on general medical wards. Relevant outcome: LoS.
	Solomon 2001, Fine 2003, Esparza 2013, Wald 2011, Auerbach 2012, Singh 2012, Thanarajasingam 2012, Saint 2013	UK, MA of 8 studies (2 RCTs), n=52345. All from the USA. Adult patients (aged ≥ 18 years) on general medical wards. Relevant outcome: 30-day readmissions.
	Fine 2003	USA, RCT, n=608. Patients hospitalised with community acquired pneumonia and hospital stay ≥2 days. Relevant outcomes: 30-days mortality. Readmissions at 30 days also captured, but already included in MA for this outcome (see above).
Patel (2020)¹⁹¹	Gregersen 2012	Denmark, retrospective cohort study, n=495. Patients >65 yrs with hip fracture (femoral neck, intertrochanteric). Relevant outcomes: LoS
	Biber 2013	Germany, retrospective cohort study, n=283. Patients with femoral neck fractures >60 years treated with primary hemiarthroplasty. Relevant outcome: LoS
	Collinge 2013	USA, retrospective cohort study. Patient > 60 yrs operatively treated of low-energy hip fractures. Relevant outcome: LoS, 30-day mortality.
	Della Rocca 2013	USA, retrospective controlled study, n=146. Patients >65 yrs with isolated hip fracture. Relevant outcome: LoS
	Flikweert 2014	Netherlands, non-randomised CT, n=401. Patients >60 yrs, with femoral neck/peritrochanteric fractures. Relevant outcomes: LoS, 30-day mortality.



	Suhm 2014	Switzerland, prospective survey, n=493. Patients >65 yrs with hip fractures. Relevant outcome: LoS.
	Lofgren 2014	Sweden, prospective cohort study, n=493. Patients >65 yrs with hip fracture and no comorbidities. Relevant outcome: LoS
	Ling 2015	Australia, prospective cohort study, n=390. Geriatric patient admitted with hip fractures. Relevant outcome: LoS
	Lynch 2015	Australia, retrospective case analysis, n=798. Fragility hip fracture patients from two pre-intervention groups and three post-intervention groups. Relevant outcome: LoS.
	Kristensen 2016,	Denmark, prospective cohort study, n=11461. Patients ≥65 years with hip fracture (including medial, pertrochanteric or subtrochanteric fractures). Relevant outcomes: LoS, 30 days mortality.
	Forni 2016	Italy, retrospective cohort study, n=23 973. Patients >65 yrs with hip fracture. Relevant outcomes: 30-day mortality.
	Henderson 2016	Ireland, retrospective cohort study n=454. Fragility hip fracture admission from (7/11 - 7/12); fracture of femoral neck admission from (7/09 - 7/10). Relevant outcomes: LoS
	Soong 2016	Canada, retrospective pre/post study, n=571. Adults with hip fracture (femoral neck and all peritrochanteric fractures). Relevant outcomes: 30-day readmissions.
	Rostango 2016	Italy, prospective cohort review, n=458. All patients with hip fracture (mean age 83). Relevant outcomes: LoS.
	Greenberg 2016	USA, retrospective cohort study, n=614. Patients >60 yrs presenting with a low-energy geriatric hip fracture Relevant outcomes: LoS and 30-day readmissions.
Peerbocus & Wang (2021)¹⁹²	Adamakis, 2010, Bansal, 2020, Choi, 2010, Collins, 2016, Declercq, 2015, Deibert., 2016, Ercolino, 2019, Frees, 2017, Jensen, 2014, Lee, 2014, Lin 2017, Maffezzini, 2007, Moeen, 2019.	Canada. MA of 13 studies (1 RCT), n=1471. 2 studies conducted in the USA, 2 in Italy, and 1 each in India, South Korea, Greece, Sweden, Belgium, Canada, Denmark, China, and Egypt. Adult patients undergoing radical cystectomy. Relevant outcome: LoS
	Bansal, 2020, Collins, 2016, Deibert, 2016, Ercolino, 2019, Lee, 2014, Lin, 2017, Moeen, 2019, Mukhtar, 2013.	Canada. MA of 8 studies (1 RCT), n=1077. 2 studies were conducted in the United States, and 1 each in India, Italy, China, Egypt, England, and Canada. Adult patients undergoing radical cystectomy. Relevant outcome: 30-day readmission.
Qin (2024)¹⁹³	Gu 2023, Kamel 2021, Li 2021, Yu 2023, Zhang 2020	China, MA of 5 studies (1 RCT), n=911. 4 of these conducted in China and 1 from Egypt. Patients undergoing cholecystectomy. Relevant outcome: LoS
	Akhtar 2020, Demouron 2022, Kamel 2021, Nechay 2021, Yu 2023	China, MA of 5 studies (3 RCTs), n=1125. 1 conducted in Russia, 1 in Pakistan, 1 in Egypt, 1 in France and 1 in China. Patients undergoing cholecystectomy. Relevant outcome: readmissions (timeline not specified).
Sarkies (2018)¹⁹⁴	Acute setting: Haynes 2017, Maidment 2014, Boxall 2004, Pengas 2015. Subacute: Brusco 2007, Peiris 2013, English 2015, Caruana 2016, Hakkennes 2015, DiSotto 2012	Acute (medical and surgical) setting: Australia, MA of 2 RCTs, n= 27 508, both undertaken in the USA, and MA of 3 observational studies, n=1177, 2 of which were completed in Australia and 1 in Scotland. Any patients admitted to acute general medical and surgical wards. Relevant outcomes: LoS. Subacute setting: Australia, MA of 3 RCTs (n= 1437), all completed in Australia and MA of 3 observational studies, n=5012. 2 of these were completed in Australia and 1 in Canada. Any patients admitted to subacute rehabilitation wards. Relevant outcomes: LoS.
	Haynes 2017	Acute (medical and surgical) setting: Australia, MA of 2 RCTs, n= 27 508, both completed in the USA. Any patients admitted to acute general medical and surgical wards. Relevant outcomes. 30-day readmission.

	Kinoshita 2017	Japan, Retrospective cohort study, n= 3072. Patients hospitalised with stroke. Relevant outcome:30-day readmissions.
	Brusco 2014	Australia, RCT, n= 996. Adults admitted for inpatient rehabilitation in two publicly funded metropolitan rehabilitation facilities, mean age 74 Relevant outcome: 30-day readmissions in subacute setting.
Saunders (2019)¹⁹⁵	Adelson 2017	USA, prospective pre/post, n=113. Cancer patients, mean age preintervention: 60 (SD:13); postintervention: 57 (SD: 13). Relevant outcomes: LoS, 30-day readmission.
	Wong 2016	Hong-Kong, RCT, n=84. Patients with end-stage heart failure, mean age: 78.3.
	Zalenski 2017	USA, experimental: post-test-only control group, n=405. Hospitalised patients in the ICU, who screened positive on palliative care referral criteria. Mean age patients with palliative care consultation (PCC): 70.2 (SD: 14.8); patients with no PCC: 65.3 (SD:15.4). Relevant outcomes: LoS, 30-day readmissions.
	Gade 2008	USA, RCT, n=517. Patients hospitalised with life-limiting illnesses. Relevant outcomes: LoS
	Montero 2016	USA, pre/post, n=4551. Cancer patients. Median age: 63. Relevant outcomes: 30-day readmissions.
Strøm (2018)¹⁹⁶	Chivite 2008; Decker 2008; Farkouh 1998; Gomez 1996; McDermott 1997; Miller 2010; Miller 2013; Roberts 1997; Ross 2007; Shen 2004; Strøm 2017a; Sun 2014	Denmark, 12 RCTs, n=2224. From these 10 were carried out in the USA, 1 in Denmark and 1 in Spain. Patients who present to the ED with an internal medicine disease or condition (eg. Chest pain). Relevant outcomes: LoS
	Strøm 2017	Denmark, RCT, n=402. Participants with any type of internal medicine disease or condition. Relevant outcomes: LoS, 30-day readmissions.
	Than 2014	New Zealand, RCT, n=542. Participants with possible cardiac chest pain in a usual clinical practice setting. Relevant outcomes: 30-day readmissions, 30-days mortality.
	Gomez 1996	USA, RCT, n=100. Patients with chest pain but low probability of MI. Mean age: 50 (intervention), 53 (standard care). Relevant outcomes: LoS, mortality at 30 days.
Stumpo (2021)¹⁹⁷	Au 2016, Beauregard 2003, Bernstein 2001, Cata 2011, Gerlach 2003, Goettel 2014, Grundy 2008, Liu 2019, Ma 2016, McLaughing 2014, McLaughing 2014, Nassiri 2019, Purzner 2011, Sughrue 2015, Ter Laan 2019, Todd 1993, Uchida 2012, Venkatraghavan 2016, Wang 2018	International, 19 studies included (2 RCT), non meta-analysed. samples from n=11 to n=1874. 6 of these conducted in Canada, 6 in the USA, 2 in China, 2 in the UK, 1 in Germany, 1 in Japan and 1 in the Netherlands. Adults undergoing elective craniotomy. Relevant outcomes: LoS
	Liu 2019	China, RCT, n=120 Adults undergoing elective craniotomy. Relevant outcome: 30-day readmission
Tinguely (2021)¹⁹⁸	Brustia, King, Rao, Xu	International, MA of 4 studies (1 RCT), n=498. 2 of these conducted in China, 1 in France and 1 in the USA. Liver transplanted patients. Relevant outcome: LoS.
	Brustia, Rao, Xu	International, MA of 3 studies (1 RCT), n=251. 2 of these conducted in China and 1 in France. Liver transplanted patients. Relevant outcome: readmissions.
	Brustia, King, Rao, Xu	International, MA of 4 studies (1 RCT), n=498. 2 of these conducted in China, 1 in France and 1 in the USA. Liver transplanted patients. Relevant outcome: mortality.

Villatte 2019¹⁹⁹	<u>lary studies</u> : Husted 2008, Larsen 2008, Mahomed 2008, Malviya 2011, Raphael 2011, Wellman 2011, Dwyer 2012, Smith 2012, Scott 2013, Jørgensen 2013, Machin 2013, Tavrose 2013, Dawson-Bowling 2014, Glassou 2014, Khan 2014, Starks 2014, Christelis 2015, Moulton 2015, Stambough 2015, Pitter 2016, <u>Reviews</u> : Khan 2008, Husted 2012, Zhu 2017	France, 3 reviews (2 systematic, 1 narrative), 1 RCT and 19 observational studies, sample sizes: NA. 11 of these conducted in the UK, 4 in Denmark, 2 in Australia, 2 in Canada, 2 in Sweden and 2 in the USA. Elderly subjects undergoing total hip arthroplasty. Relevant outcome: LoS
	Jørgensen 2013	Denmark, prospective study, n=3020. Patients undergoing fast-track THA and TKA. Relevant outcomes: LoS and 30-day readmissions
	Malviya 2011	UK, observational study, n=4500 procedures included. Patients undergoing total hip and/or total knee replacements. Relevant outcomes: LoS and 30-day mortality
	Khan 2014	UK, retrospective study, n=5319. Patients undergoing arthroplasty. Relevant outcome: LoS and 30-day mortality
Yan Yu Tan (2021)	<u>Breast reconstruction</u> : Afonso 2017, Astanehe 2018, Bonde 2015, Kaoutzanis 2018, Oh 2018, Rochlin 2019, Sharif-Askary 2019, Sindali 2019. <u>Head and neck reconstruction</u> : Bater 2017, Coyle 2016, Imai 2018, McMachon 2017	Breast reconstruction: MA of 8 observational studies, n=1947. 6 studies conducted in the USA, 1 in the UK and 1 in Denmark. Head and neck reconstruction: MA of 4 observational studies, n=1099. 3 studies conducted in the UK and 1 in Japan. Patients requiring flaps (reconstruction breast or neck surgery). Relevant outcomes: LoS
	Breast reconstruction: Afonso 2017, Astanehe 2018, Kaoutzanis 2018, Oh 2018, Rochlin 2019, Sharif-Askary 2019, Sindali 2019. Head and neck reconstruction: Bater 2017	Breast reconstruction: MA of 7 observational studies, n=1478. 6 studies conducted in the USA and 1 in the UK. Head and neck reconstruction: 1 observational study, n=140, conducted in the UK. Patients requiring flaps (reconstruction breast or neck surgery). Relevant outcomes: 30-day readmissions
Yung Lee (2020)	Wang 2009, Tang 2010, He 2010, Wang 2010, Hu 2012, Wang 2014, Bu (Age: 75-89 years) 2015, Bu (Age: 45-74 years) 2015, Liu 2016, Zhao 2018, Kim 2012, Feng, 2013, Abdikarim 2015, Li 2016, Xu 2017, Mingjie 2017, Kang 2018, Zhang 2018	MA of 17 RCTs, n=1640. 15 of these conducted in China and 2 in Korea. Patients undergoing elective gastric cancer surgery. Relevant outcomes: LoS
	Wang 2010, Bu 2015, Kim 2012, Feng 2013, Abdikarim 2015, Li 2016, Tanaka 2017, Kang 2018	MA of 8 RCTs, n=938. 5 of these conducted in China, 2 in Korea and 1 in Japan. Patients undergoing elective gastric cancer surgery. Relevant outcomes: 30-day readmissions
Zepeda-Lugo (2020)²⁰⁰	Iannettoni, 2011	USA, pre/post, n=64. Patients hospitalised in a cardiothoracic unit. Relevant outcomes: LoS.
	Hseng-Long, 2011	Taiwan, pre/post, n=46. Patients hospitalised in cardiology. Relevant outcomes: LoS
	Gayed, 2013	USA, pre/post, n=540. Patients hospitalised for surgery. Relevant outcomes: LoS
	Dela Lama, 2013	Spain, pre/post, n=75490. Patients hospitalised in a rehabilitation ward. Relevant outcomes: LoS
	Beck, 2016	USA, pre/post, n=6906. Patients arriving to the ED. Relevant outcomes: LoS
	Trzeciak, 2018	USA, cohort study, n=269. Patients in an intensive care unit. Relevant outcomes: LoS



	Burkitt, 2009	USA, cohort study, n=1779. Patients hospitalised for surgery. Relevant outcomes: LoS
	New, 2016	UK, pre/post, n=1041. Patients from the orthopaedic trauma theatre. Relevant outcomes: LoS
	Artenstein, 2017	USA, pre/post, no information on sample size. Patients in the ED. Relevant outcomes: LoS
	Yousri, 2011	UK, pre/post, n=608. Patients having undergone surgery. Relevant outcomes: LoS , 30-day mortality.
	Montella, 2017	Italy, pre/post, n=22262. Patients having undergone surgery. Relevant outcomes: LoS.
	Beck, 2015	USA, pre/post, n=3509. Paediatric hospitalised patients. Relevant outcomes: LoS.
	Toledo, 2013	USA, pre/post, n=103. Patients at organ transplant centre. Relevant outcomes: LoS readmissions, 30-day mortality.
	Molla, 2018	USA, pre/post, n=1471. Patients in the operating room. Relevant outcomes: LoS and 30-day readmissions.
	Niemeijer, 2010	Netherlands, pre/post, n=1693. Patients at a trauma care. Relevant outcomes: LoS.
	Sayeed, 2018	USA, pre/post, n=505. Patients in the operating room. Relevant outcomes: LoS and 30-day readmissions
	Brunsmann, 2018	USA, cohort study, n=102. Inpatient pharmacy. Relevant outcomes: LoS.
	Johnson, 2016	USA, pre/post, n=1394. Patients in the ED. Relevant outcomes: LoS and 30-day readmissions.
	Sirvent, 2016	Spain, pre/post, n=1388. Patients in the ICU. Relevant outcomes: LoS.
	Niemeijer, 2013	Netherlands, pre/post, n=332. Patients undergoing surgery. Relevant outcomes: LoS.
	Sorensen, 2019	USA, pre/post, n=4253. Patients undergoing surgery. Relevant outcomes: LoS and 30-day readmissions.
	Moo-Young, 2019	USA, pre/post, n=355. Paediatric patients in a hospital gastroenterology department. Relevant outcomes: LoS and 30-day readmissions.
	El-Eid 2015	Lebanon, pre/post, n=17054. Patients in the ED. Relevant outcomes: LoS.
Zhang (2024)²⁰¹	Wei 2021, Yang 2016, Aguado-Maestro 2022, Elmoghazy 2022, Wu 2021, den Hertog 2012, Fransen 2018, Larsen I 2009, Zhang 2020, Plessl 2020, Featherall 2018, Gleicher 2021, Gwynne-Jones 2017, Christelis 2015, Picart 2021, Gulotta 2011, Yanik 2018, Zhong 2021, Chung 2021, Jiang 2019, de Carvalho 2021, Azam 2022, Koksai 2015, Larsen 2008, Galbraith 2017, Larsen II 2009,	China, MA of 30 studies (9 RCTs), n=11460. 14 of these conducted in Europe, 8 in Asia, 5 in North America, 2 in Oceania and 1 in South America. Patients undergoing hip and knee arthroplasty. Relevant outcome: LoS



	Wilches 2017, Dwyer 2017, Arienti 2021, Talboys 2016	
	Berg 2018 (hip), Berg 2018 (knee), Ripollés-Melchor 2020, Gwynne-Jones 2017, Stowers 2016, Pamilo I 2018, Auyong 2015, Pamilo II 2018, Galbraith 2017	China, MA of 9 studies, (no RCTs) n=23767. 2 of these conducted in Sweden, 2 in Finland, 1 in Ireland, 1 in Spain 1 in the USA and 2 in New Zealand. Patients undergoing hip and knee arthroplasty. Relevant outcome: 30-day readmissions
		China, MA of 6 studies, n=19711. Patients undergoing hip and knee arthroplasty. Relevant outcome: 30-day post operative mortality
Zhou (2024) ²⁰²	Aguado-Maestro 2022, Wei 2021, Zhang 2016, Fransen 2018, Larsen 2008, Dong 2020, Meng 2015, Zhang 2020, Hua 2016	China, MA of 9 RCTs, n=800. 6 conducted in China, 1 in Spain, 1 in Denmark and 1 in the Netherlands. Patients who underwent total hip arthroplasty (THA) and total knee arthroplasty (TKA). Relevant outcomes: LoS
	Aguado-Maestro 2022, Dowsey 1999, Larsen 2008, Lan 2023	China, MA of 4 RCTs, n=648. 1 conducted in Australia, 1 in Denmark, 1 Spain and 1 in China. Patients who underwent total hip arthroplasty (THA) and total knee arthroplasty (TKA). Relevant outcomes: 30-days readmissions
	Yang 2016, Larsen 2008, Lan 2023	China, MA of 3 RCTs, n=560. 1 conducted in Denmark, and 2 in China. Patients who underwent total hip arthroplasty (THA) and total knee arthroplasty (TKA). Relevant outcomes: post operative mortality. Time frame not specified
Zhu (2017) ²⁰³	Auyong 2015, Christelis 2015, Malviya 2021, McDonald 2012, Stambough 2015, Stowers 2016, Talboys 2016	China, MA of 7 (RCT and observational studies included. Not specified in article the type of study included in MA), n=8346. 4 of these conducted in the UK, 2 in the USA, 1 in Australia, 1 in France and 1 in New Zealand. Patients who received total hip arthroplasty (THA) or total knee arthroplasty (TKA). Relevant outcomes: LoS
	Auyong 2015, Christelis 2015, Malviya 2011, Stambough 2015, Stowers 2016	China, MA of these 5 (RCT and observational studies included. Not specified in article the type of study included in MA), n= 6430. 2 of these conducted in the USA, 1 in Australia, 1 in New Zealand and 1 in the UK. Patients who received total hip arthroplasty (THA) or total knee arthroplasty (TKA).. Relevant outcomes: 30-day readmissions
Zhu (2015) ²⁰⁴	Altfeld 2013, Jack 2009, Lin 2009, Naylor 1999, Youssef 1987	China, MA of 5 RCTs (n=1912), 4 from the USA and 1 from Taiwan. Inpatients with chronic illness or rehabilitation in the general hospital setting. Relevant outcome: LoS
	Naylor 1999, Wong 2012	China, MA of 2 RCTs (n=1293), 1 carried out in the USA and one from Hong Kong. Inpatients with chronic illness or rehabilitation in the general hospital setting. Relevant outcome: 30-day readmissions.
	Jack (2009)	USA, RCT, n=749. English-speaking hospitalised adults, mean age: 50,1 (intervention), 49,6 (control). Relevant outcome: 30-day mortality.
	Altfeld (2013)	USA, RCT, n=720. Hospitalised older adults, mean age: 74,1 (intervention), 75,0 (control). Relevant outcome: 30-day mortality.

Table 30 – AMSTAR-2 evaluation of systematic reviews on interventions facilitating shorter length of stay while avoiding inappropriate readmissions

	Agarwal 2019	Allen 2014	Austin 2020	Berkovic 2023	Chakraborty 2020	Coffey 2019	Coolsen 2013	Deng 2018	Doshmangir 2022	Ellis 2017
<i>1. Research question and inclusion criteria include components of PICO</i>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<i>2. Explicit statement on protocol prior to conduct of review</i>	yes	no	yes	yes	yes	no	no	no	no	yes
<i>3. Explain selection study design (RCT and/or observational)</i>	yes	no	partial yes	Partial yes	no	no	partial yes	partial yes	no	partial yes
<i>4. Comprehensive literature search strategy</i>	yes	partial yes	yes	yes	yes	partial yes	partial yes	partial yes	yes	yes
<i>5. Study selection in duplicate</i>	yes	yes	partial yes	yes	yes	yes	yes	yes	yes	partial yes
<i>6. Data extraction in duplicate</i>	yes	no	no	Partial yes	yes	no	yes	yes	no	yes
<i>7. List of excluded studies</i>	yes	yes	no	no	no	no	no	yes	no	yes
<i>8. Details included studies</i>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<i>9. Satisfactory technique to assess Risk of Bias included studies</i>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<i>10. Source of funding included studies</i>	no	no	no	no	no	no	no	no	no	no
<i>11. Appropriate methods for statistical combination of results (meta-analysis)</i>	yes	yes	yes	yes	partial yes	partial yes	yes	yes	partial yes	yes
<i>12. Assess potential impact of risk of bias individual studies on the results of meta-analysis</i>	NA	NA	NA	Partial yes	NA	NA	yes	no	NA	yes
<i>13. Account for risk of bias individual studies when interpreting/discussing results of the review</i>	yes	yes	partial yes	yes	partial yes	partial yes	yes	yes	no	yes
<i>14. Satisfactory explanation for heterogeneity observed</i>	yes	partial yes	partial yes	Partial yes	partial yes	partial yes	no	yes	no	yes
<i>15. Adequate investigation of publication bias</i>	no	no	no	Partial yes	no	no	yes	yes	no	yes



16. Report potential sources of conflict of interest including funding	yes	yes	yes	yes	yes	yes	partial yes	yes	yes	yes
Number of items with yes or partial yes	13	10	11	14	11	9	12	13	7	15

Table 31 – AMSTAR-2 evaluation of systematic reviews on interventions facilitating shorter length of stay while avoiding inappropriate readmissions (cont)

	Fox 2012	Fox 2013	Gonçalves 2022	Guerin 2013	Harij 2024	Heymans 2022	Huntley 2016	Kalogera 2019	Kennelly 2025	Kuemmerli 2024
1. Research question and inclusion criteria include components of PICO	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
2. Explicit statement on protocol prior to conduct of review	yes	yes	yes	no	yes	yes	no	no	yes	yes
3. Explain selection study design (RCT and/or observational)	partial yes	partial yes	no	no	no	no	yes	no	yes	yes
4. Comprehensive literature search strategy	partial yes	yes	yes	yes	partial yes	partial yes	yes	no	yes	yes
5. Study selection in duplicate	yes	yes	yes	partial yes	yes	yes	yes	no	yes	yes
6. Data extraction in duplicate	yes	yes	yes	no	partial yes	partial yes	no	no	yes	yes
7. List of excluded studies	no	no	yes	no	no	no	no	no	no	no
8. Details included studies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
9. Satisfactory technique to assess Risk of Bias included studies	yes	yes	yes	partial yes	yes	yes	yes	no	yes	yes
10. Source of funding included studies	no	no	no	no	no	no	no	no	no	no
11. Appropriate methods for statistical combination of results (meta-analysis)	yes	yes	yes	partial yes	yes	yes	yes	partial yes	yes	yes
12. Assess potential impact of risk of bias individual studies on the results of meta-analysis	no	yes	yes	NA	no	partial yes	yes	NA	yes	yes

Table 32 – AMSTAR-2 evaluation of systematic reviews on interventions facilitating shorter length of stay while avoiding inappropriate readmissions (cont)

[illegible]



11.Appropriate methods for statistical combination of results (meta-analysis)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
12.Assess potential impact of risk of bias individual studies on the results of meta-analysis	yes	yes	no	yes	yes	yes	NA	no	yes	yes
13.Account for risk of bias individual studies when interpreting/discussing results of the review	yes	yes	yes	yes	yes	partial yes	yes	yes	partial yes	yes
14.Satisfactory explanation for heterogeneity observed	partial yes	yes	partial yes	yes	partial yes	yes	yes	partial yes	yes	yes
15.Adequate investigation of publication bias	yes	yes	partial yes	no	no	yes	no	yes	yes	yes
16.Report potential sources of conflict of interest including funding	yes	yes	partial yes	yes	yes	yes	no	no	yes	no
Number of items with yes or partial yes	13	12	11	12	8	15	10	10	14	9

Table 33 – AMSTAR-2 evaluation of systematic reviews on interventions facilitating shorter length of stay while avoiding inappropriate readmissions (cont)

	Noba 2023	Pang 2024	Pannick 2015	Patel 2020	Peerbocus 2021	Qin 2024	Sarkies 2018	Saunders 2019	Strøm 2018	Stumpo 2021
1.Research question and inclusion criteria include components of PICO	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
2.Explicit statement on protocol prior to conduct of review	no	yes	no	no	no	yes	yes	yes	yes	yes
3.Explain selection study design (RCT and/or observational)	no	no	no	no	partial yes	no	no	no	yes	yes
4.Comprehensive literature search strategy	partial yes	no	yes	yes	yes	partial yes	yes	yes	yes	yes
5.Study selection in duplicate	no	yes	partial yes	yes	yes	yes	yes	partial yes	yes	yes
6.Data extraction in duplicate	no	yes	yes	no	no	yes	yes	partial yes	yes	NA
7.List of excluded studies	no	no	no	no	no	no	yes	no	yes	no

8.Details included studies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
9.Satisfactory technique to assess Risk of Bias included studies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
10.Source of funding included studies	no	no	no	no	no	no	no	no	yes	no
11.Appropriate methods for statistical combination of results (meta-analysis)	yes	yes	partial yes	no	yes	yes	yes	yes	yes	partial yes
12.Assess potential impact of risk of bias individual studies on the results of meta-analysis	no	NA	yes	yes	yes	yes	yes	NA	yes	yes
13.Account for risk of bias individual studies when interpreting/discussing results of the review	partial yes	yes	yes	no	partial yes	partial yes	yes	yes	yes	partial yes
14.Satisfactory explanation for heterogeneity observed	yes	no	partial yes	no	yes	yes	yes	yes	yes	partial yes
15.Adequate investigation of publication bias	yes	yes	no	no	yes	yes	no	no	yes	no
16.Report potential sources of conflict of interest including funding	yes	partial yes	yes	yes	yes	yes	yes	yes	yes	partial yes
Number of items with yes or partial yes	9	10	11	7	12	13	13	11	16	12



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