

Supplemental Digital Content 2. Causes of LOS > 4 days and 90 day surgery-related readmissions

Postoperative morbidity:	details on causes of LOS >4 days	n (%)	details on 90-day readmissions^a	n (%)
Anesthetic complications:				
No PsD	3 related to regional or spinal anesthesia, 1 with cramps upon awakening and 1 with compression symptoms due to positioning.	5 (0.1)	none	none
PsD	1 related to spinal anesthesia	1 (0.1)		
“potential” PsD		0 (0)		
Surgical complications				
No PsD	2 arterial thrombi, 19 with postoperative hematomas or wound-swelling, 9 periprosthetic fractures, 8 prosthesis malfunctions, 4 with nerve lesions and 8 with other surgical complications.	50 (0.7)	1 arterial thrombosis, 1 arterial aneurism, 7 with hematomas or wound-swelling, 20 periprosthetic fractures, 19 prosthesis malfunctions, 7 with wound complications, 8 with other surgical complications	63 (0.9)
PsD	1 suspected arterial thrombosis, 5 periprosthetic fractures, 1 prosthesis malfunction and 2 hematomas	9(0.9)	1 hematoma, 4 periprosthetic fractures, 3 prosthesis malfunctions, 2 wound complications	10 (1.0)
“potential” PsD	2 hematomas and 1 other surgical complication	3(0.8)	1 prosthesis malfunction 2 with other surgical complications	3 (0.8)
Prosthesis infections				
No PsD	4 wound infections but not requiring revision surgery	4(0.1)	24 treated with antibiotics only, 9 wound incisions, 47 revisions	80 (1.1)
PsD		0(0)	5 treated with antibiotics only, 1 wound incision, 12 revisions	18 (1.8)
“potential” PsD	1 wound infection but not requiring revision surgery	1(0.3)	1 treated with antibiotics only, 6 revisions	7 (2.0)
Hip displacement^b				
No PsD	1 with additional cardiac morbidity and 1 with additional pulmonary morbidity	5 (0.1)		60 (1.5)
PsD		4 (0.8)		13 (2.7)
“potential” PsD		1 (0.6)		3 (1.7)

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Knee manipulation^c				
No PsD	none	none		27 (0.8)
PsD				2 (0.4)
“potential” PsD				2 (1.1)
Falls				
No PsD	3 with fractures, 2 with tendon rupture, 3 with wound ruptures, 1 with minor injury	9 (0.1)	21 with fractures, 2 with tendon rupture, 2 with wound rupture, 8 with hip displacements, 10 with minor injuries	43 (0.6)
PsD	1 with fracture, 1 with minor injury	2 (0.2)	11 with fractures, 1 with tendon rupture, 1 with wound rupture, 1 with hip displacement, 4 with minor injuries	19 (1.9)
“potential” PsD	1 with hip dislocation	1 (0.3)	2 with fractures, 2 with minor injuries	4 (1.1)
Cardiac				
No PsD	24 arrhythmias, 2 MIs, 3 due to cardiac decompensation, 1 severe hypotension, 4 with unspecific chest pain, 1 with unspecific ECG changes.	35 (0.5)	17 arrhythmias, 11 MIs, 2 due to cardiac decompensation, 8 with unspecific chest pain	38 (0.5)
PsD	5 arrhythmias, 1 severe hypotension, 2 with unspecific chest pain	8 (0.8)	1 arrhythmia, 1 MI, 4 with unspecific chest pain	6 (0.6)
“potential” PsD	1 arrhythmia, 1 due to repeated syncope	2 (0.6)	2 MIs, 1 with unspecific chest pain	3 (0.8)
Pulmonary				
No PsD	17 pneumonias, 1 disproved PE, 3 with postoperative respiratory insufficiency and prolonged oxygen treatment (1 treated as PE despite normal CT-scan, 2 unexplained)	21 (0.3)	29 pneumonias, 6 with acute worsening of COPD (1 not needing antibiotics) 1 dyspnea	36 (0.5)
PsD:	6 pneumonias, 1 atelectasis, 1 COPD and 3 with postoperative respiratory insufficiency and prolonged oxygen treatment (1 undiagnosed sleep apnea requiring intensive care, 2 unexplained)	11 (1.1)	6 pneumonias, 5 COPD with acute worsening of (1 not needing antibiotics)	11 (1.1)
“potential” PsD	Both due to pneumonia	2 (0.6)	2 pneumonias	2 (0.6)

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Cerebral				
No PsD	1 CT-verified stroke, 2 cerebral hemorrhages, 2 with postoperative delirium and 2 with unexplained transient changes of consciousness	7 (0.1)	7 CT-verified strokes, 7 TCI, 1 cerebral hemorrhage	14 (0.2)
PsD	2 CT-verified strokes, 3 TCIs, 1 cerebral hemorrhage, 1 postoperative delirium and 1 with psychosis	8 (0.8)	1 CT-verified stroke	1 (0.1)
“potential” PsD	1 CT-verified stroke, 1 postoperative delirium, 1 with psychosis	3 (0.8)	1 CT-verified stroke, 1 TCI	2 (0.6)
GI				
No PsD	14 GI-bleeds, 6 dyspepsia, 6 ileus, 6 with constipation	32 (0.4)	16 GI-bleeds, 3 gastritis, 1 ileus, 1 constipation, 5 with diarrhea	26 (0.4)
PsD:	3 GI-bleeds, 1 dyspepsia, 1 ileus	5 (0.5)	3 GI-bleeds, 2 gastritis	5 (0.5)
“potential” PsD	1 with perforated diverticulitis	1 (0.3)	1 GI-bleed, 2 gastritis, 1 ileus, 1 with gastroenteritis	5 (1.4)
Renal				
No PsD	2 needing dialysis, 13 with increasing creatinine and need of fluids and/or diuretics, 1 observed due to urostomy and dark colored urine, 5 with electrolyte derangement, 5 needing additional fluid therapy without increased creatinine	26 (0.4)	1 renal impairment with increasing creatinine and need of fluids and/or diuretics	1 (0.0)
PsD	1 with fatal acute renal failure, 3 with increasing creatinine and need of fluids and/or diuretics 2 with electrolyte derangement, 1 needing additional fluid therapy without increased creatinine	7 (0.7)	1 renal impairment with increasing creatinine and need of fluids and/or diuretics	1 (0.1)
“potential” PsD	1 with increasing creatinine and need of fluids and/or diuretics, 1 with electrolyte derangement	2 (0.6)	1 renal impairment with increasing creatinine and need of fluids and/or diuretics	1 (0.3)
Urologic				
No PsD	3 with urinary retention, 6 urinary tract infections	9 (0.1)	5 with urinary retention, 8 urinary tract infections, 1 hematuria due to bladder catheter	14 (0.2)
PsD	2 with urinary retention, 4 urinary tract infections	6 (0.6)	3 urinary tract infections	3 (0.3)
“potential” PsD	1 urinary retention, 1 with complications due to a bladder catheter	2 (0.6)	1 with urinary retention	1 (0.3)

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Pain				
No PsD	20 with surgical pain, 5 with pain of other origin	25 (0.3)	20 with surgical pain, 1 with pain mainly related to a previously slipped disc	21 (0.3)
PsD	10 with surgical pain, 3 with pain of other origin	13 (1.3)	all due to surgical pain	4 (0.4)
“potential” PsD	All due to surgical pain	5 (1.4)	all due to surgical pain	3 (0.8)
Anemia				
No PsD	All received blood transfusions	17 (0.2)	16 received blood transfusions	22 (0.3)
PsD	All received blood transfusions	11 (1.1)	All received blood transfusions	7 (0.7)
“potential” PsD		0 (0)	1 received blood transfusion	2 (0.6)
VTE				
No PsD	6 PE	6 (0.1)	15 DVT, 12 PE	27 (0.4)
PsD	2 PE, 1 DVT	3 (0.3)	2 PE	2 (0.2)
“potential” PsD	1 DVT	1 (0.3)	1 DVT	1 (0.3)
Mob/Med				
No PsD	48 with prolonged time to full mobilization, 4 due to opioid overdose with sedation, 1 due to other side-effects	53 (0.7)	5 needing in-hospital rehabilitation, 7 with alleged opioid side-effects (5 nausea, 1 constipation, 1 dyspnea)	12 (0.2)
PsD	7 with prolonged time to full mobilization, 3 with alleged opioid side-effects (1 nausea and constipation, 2 overdoses with sedation), 1 due to lithium poisoning	11 (1.0)	3 needing in-hospital rehabilitation, 3 with alleged opioid side-effects (2 nausea, 1 overdose with sedation)	6 (0.6)
“potential” PsD	All with prolonged time to full mobilization	9 (2.5)	1 with alleged opioid side-effects (constipation), 1 acetaminophen overdose	2 (0.6)

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Other medical causes				
No PsD	2 with unspecified sepsis, 5 due to unspecific infections, 6 due to dizziness, 5 due to nausea, 5 with other medical conditions	23 (0.3)	4 due to unspecific infections, 5 due to fainting, 4 with other medical conditions	13 (0.2)
PsD	2 with unspecified sepsis, 4 due to unspecific infections, 1 with medical conditions	7 (0.7)	2 due to unspecific infections, 1 due to nausea, 1 with other medical conditions	4 (0.4)
“potential” PsD	1 due to unspecific infection, 1 due to dizziness,	2 (0.6)	1 due to unspecific infection, 1 due to fainting, 2 with other medical conditions	4 (1.1)
Other causes				
No PsD	2 scheduled for other surgery, 2 receiving additional planned treatment for known hemophilia, 1 due to swelling after physiotherapy, 1 with spontaneous remission of suspected cauda equina syndrome, 2 due to social reasons	8 (0.1)	none	none
PsD	1 due to alcohol related problems, 1 due to social reasons	2 (0.2)		
“potential” PsD	1 due to a twisted knee needing observation, 2 due to social reasons	3 (0.8)		
Disproved VTE^d				
No PsD			68 disproved DVTs, 3 disproved PE	71 (1.0)
PsD			15 disproved DVTs, 2 disproved PE	17 (1.7)
“potential” PsD	1 disproved DVT	1 (0.2)	3 disproved DVTs	3 (0.8)
Disproved infection				
No PsD	none	none	All patients were admitted for observation only with no subsequent raise in biomarkers or clinical symptoms	32 (0.4)
PsD				8 (0.8)
“potential” PsD				3 (0.8)

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No registered morbidity				
No PsD		205 (2.8)	none	none
PsD		60 (6.0)		
“potential” PsD		22 (6.2)		

^aOnly the first readmission per procedure for each category is included and COPD without need of antibiotics, uncomplicated urinary tract infection and syncope included in the first 30 days only. ^bpercentage of hip arthroplasties, hip displacements due to falling are included as “falls” ^cpercentage of knee arthroplasties ^dpatients with suspected VTE but discharged without positive ultrasound (DVT) or lung scintigraphy/computer tomography (PE) and no other conditions requiring hospitalization.

COPD: chronic obstructive pulmonary disease; CT: computerized tomography; DVT: deep venous thrombosis; ECG: electrocardiogram; GI: gastrointestinal; LOS: length of stay; MI: myocardial infarction; Mob/Med: mobilization/medication; PE: pulmonary embolism; PsD: psychiatric disorder; TCI: transient cerebral ischemia; VTE: venous thromboembolic event