

eTable 1: Studies that met inclusion criteria for the primary, secondary and tertiary analysis

First Author (Year)	Study Design	Surgery Type	Surgery Urgency	Study size (n)	Age (mean)	Gender (% female)	ASA (<=2)	Delirium Diagnosis	Baseline Cognitive Impairment (proportion)	Mortality (length of follow-up)	Crude OR (unless otherwise specified)	Adjusted OR (unless otherwise specified)	Primary Analysis	Secondary Analysis	Event rates (for mortality)
Hempenius (2016) ⁴⁵	Randomized Controlled Trial	Mixed (general surgery, gynaecology, ear, nose and throat and maxillofacial surgery)	Elective	227	77.4	62%	N/A	Delirium Observation Screening Scale (DOSS) and DSM-IV criteria	MMSE (mean: SD) Group 1: 26.97 (2.47) Group 2: 26.51 (3.74)	In hospital 90 day	1.65 (95% CI: 0.37 to 5.56) 2.04 (95% CI: 0.54 to 6.37)				Delirious: 4/31 Non-delirious: 10/222 Delirious: 5/31 Non-delirious: 21/222
Gottschalk (2015) ¹¹	Prospective cohort	Orthopedics (Hip Fractures)	Emergency	459	81.3	73	0.16	CAM	Dementia (0.26)	49 mth (mean F/U)	(HR) 1.65 (95% CI: 1.32 to 2.06)	(HR) 1.2 (95% CI: 0.93 to 1.54)	X		Delirious: 127/151 Non-delirious: 213/308
Raats (2015) ⁴⁶	Prospective cohort	General Surgery	Mixed	111	76 ^a	48	0.62	DOSS	N/A	30 day 6 mth	18.31 ^b (95% CI: 1.63 to 911.72) 3.53 ^b (95% CI: 0.88 to 13.25)				Delirious: 4/23 Non-delirious: 1/88 Delirious: 6/23 Non-delirious: 8/88
Raats (2015) ⁴⁷	Prospective cohort	Mixed (AAA and colorectal)	Elective	232	AAA (73 ^b); Colorectal (75 ^b)	44.4	0.61	DOSS and DSM-IV criteria	N/A	30 day 6 mth	18.38 (95% CI: 1.40 to 969.13) 7.96 (95% CI: 2.09 to 30.50)				Delirious: 3/35 Non-delirious: 1/197 Delirious: 7/35 Non-delirious: 6/197
Camevali (2015) ⁴⁸	Prospective cohort	Orthopedics (Hip Fractures)	Emergency	177	83.4	82	0.38	CAM, DSM criteria	MMSE (avg=22.5)	3 mth	1.36 ^b (95% CI: 0.22 to 6.30)				Delirious: 3/43 Non-delirious: 7/134
Visser (2015) ⁴⁹	Prospective cohort	Vascular	Elective	463	72	23	0.35	DOSS and DSM-IV criteria	Cognitive impairment (0.13), Depression (0.43)	12 mth	3.64 (95% CI: 0.98 to 11.10)				Delirious: 5/22 Non-delirious: 33/441
Radinovic (2014) ³⁷ ; Radinovic (2015) ³⁶	Prospective cohort	Orthopedics (hip fracture)	Emergency	270	78.1	74	0.19	CAM	GDS > 6 (0.31), SPMSQ (mean=5.7)	30 day	3.47 ^c (95% CI: 1.29 to 10.83)	0.46 (95% CI: 0.13 to 1.65)	X		Delirious: 21/143 Non-delirious: 6/127
Gallagher (2014) ⁶⁷	Prospective cohort	General surgery (pancreatico-duodenectomy)	Elective	50	62.7	38	0.6	DSM	N/A	In hospital	N/A ^d				Delirious: 1/7 Non-delirious: 0/43
Parente (2013) ⁵⁰	Prospective cohort	General surgery, Orthopedic, urological, vascular, plastic, gynecology	Not reported	97	56 ^a	55	0.74	ICDSC	N/A	In hospital	45 ^b (95% CI: 1.73 to 2679.6)				Delirious: 2/6 Non-delirious: 1/91
Large (2013) ⁵¹	Prospective cohort	Cystectomy	Elective	49	74.2 ^a	18	N/A	CAM	MMSE (mean=26.1 ^f)	90 day 12 mth	1.32 ^b (95% CI: 0.18 to 7.55) 1.06 ^b (95% CI: 0.23 to 4.56)				Delirious: 3/14 Non-delirious: 6/35 Delirious: 5/14 Non-delirious: 12/35

^a median^b calculated using STATA 10.0 (OR with Cornfield approximation using cci command)^c Baseline data obtained from paper^d exact CI's not possible with zero count cells^e calculated using data from Table 1 (Large et al 2013)

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Veiga (2013) ³⁹	Prospective cohort	General surgery (hepatectomy)	Elective	70	59 ^b	50	0.33	ICDSC	N/A	6 mth	13.78 (95% CI: 3.4 to 55.6)	9.33 (95% CI: 1.35 to 64.61)		X	Delirious: 9/17 Non-delirious: 4/53
Abelha (2013) ^{38,a} , Viega (2012) ⁴⁰	Prospective cohort	Major non-cardiac (mixed)	Elective	562	66 ^b	37	0.34	ICDSC	N/A	SICU In hospital 6 mth	2.68 ^c (95% CI: 0.45 to 51.80) 6.19 ^c (95% CI: 2.68 to 14.16) 4.26 ^c (95% CI: 2.37 to 7.53)	 2.562 (95% CI: 1.36 to 4.82)		X	Delirious: 1/89 Non-delirious: 2/473 Delirious: 15/89 Non-delirious: 15/473 Delirious: 28/89 Non-delirious: 46/473
Liu (2013) ⁶⁸	Prospective cohort	Abdominal, Bone/joint, Spine	Not reported	338	71	44	0.82	CAM-ICU	MMSE (mean=27)	30 day	N/A ^d				Delirious: 0/50 Non-delirious: 1/288
Neufeld (2013) ⁶⁴ , Neufeld (2015) ⁶⁵	Prospective cohort	Orthopedics (mixed)	Mixed	91	77.5	58	0.36	DSM-IV criteria	MMSE (median: IQR) 26 (23 to 27)	22 mth	(Median survival) Delirious: 19 mths (IQR: 18 to 20) Non-delirious: 19 mths (IQR: 18 to 20)				Delirious: 41 Non-delirious: 50 *no event rates
Dubljanin-Raspovic (2012) ¹³ , Dubljanin-Raspovic (2015) ¹²	Prospective cohort	Orthopedics (Hip Fractures)	Emergency	344	78.2	80	0.58	CAM	Cognitive impairment (SPMSQ) <3 (0.11)	30 day (2015) 12 mth (2012)	11.11 (95% CI: 4.55 to 25) ^e 4.67 (95% CI: 2.97 to 7.34)	9.09 (95% CI: 3.45 to 25) ^d 2.31 (95% CI: 1.36 to 3.90)		X	Delirious: 12/43 Non-delirious: 10/301 Delirious: 28/43 Non-delirious: 59/301
Kat (2011) ⁵⁸	Prospective cohort	Orthopedics (hip fracture)	Emergency	603	77.9	77	N/A	DSM	MMSE (mean=25.2)	In hospital 24 mth	7.79 ^c (95% CI: 2.24 to 26.76) HR = 4.46 (95% CI: 2.75 to 7.25)				Delirious: 7/74 Non-delirious: 7/529 Delirious: 29/74 Non-delirious: 61/529
Brouquet (2010) ⁵³	Prospective cohort	General Surgery	Elective	118	81.3	53	0.57	CAM	MMSE <26 (0.305), GDS>4 (0.29)	In hospital	4.83 ^c (95% CI: 0.75 to 34.67)				Delirious: 4/28 Non-delirious: 3/90
Koebrugge (2010) ⁵⁴	Prospective cohort	Vascular	Mixed	107	69	23	Not reported	DSM	N/A	In hospital	5.45 ^c (95% CI: 0.58 to 67.68)				Delirious: 3/25 Non-delirious: 2/82
Ansaloni (2010) ⁵⁵	Prospective cohort	General Surgery	Mixed	357 ^f	76.4	59	0.15 (>=4)	CAM	SPMSQ (delirious=2, non-delirious=0)	In hospital	2.59 ^c (95% CI: 0.99 to 6.22)				Delirious: 9/47 Non-delirious: 26/310
Robinson (2009) ⁵⁶	Prospective cohort	Abdominal, Thoracic, Vascular	Elective	144	64	3	N/A	CAM-ICU	Mini-cog (delirious=2.8, non-delirious= 4.6)	In hospital 30 day 6 mth	N/A ^d 8.17 ^c (95% CI: 0.94 to 380.49) 9.94 ^c (95% CI: 2.09 to 93.04)				Delirious: 3/64 Non-delirious: 0/80 Delirious: 6/64 Non-delirious: 1/80 Delirious: 13/64 Non-delirious: 2/80

^a data presented is from Abelha et al 2013.^b median^c calculated using STATA 10.0 (OR with Cornfield approximation using cci command)^d exact CI's not possible with zero count cells^e calculated using data presented in Table 3 (Dubljanin-Raspovic et al 2015)^f There were 351 patients, with 357 admissions (Ansaloni et al 2010)

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Koebrugge (2009) ⁵⁷	Prospective cohort	General Surgery	Elective	71	74	48	N/A	Delirium Observation Scale, DSM	GDS (delirious=3.0, non-delirious= 2.1)	In hospital	10.83 ^a (95% CI: 1.48 to 120.88)				Delirious: 5/17 Non-delirious: 2/54
Bickel (2008) ⁴¹	Prospective cohort	Orthopedics (hip surgery)	Mixed (Elective= 0.72, Fracture= 0.28)	200	73.8	69.5	N/A	CAM	MMSE (avg=27.1)	8 mth 38 mth	4.2 (95% CI: 1.2 to 15.5) 4.8 (95% CI: 2.1 to 10.8)	1.3 (95% CI: 0.2 to 8.5) 1.7 (95% CI: 0.6 to 5.0)		X	Delirious: 5/41 Non-delirious: 5/159 Delirious: 15/41 Non-delirious: 17/159
Kat (2008) ⁵²	Case-control	Orthopedics (hip surgery)	Mixed	112	82.8	73	N/A	CAM, DSM-IV	MMSE (delirious=21.2 vs non-delirious=22.6), GDS (delirious= 1.5 vs non-delirious=1.0)	30 mth (avg)	RR (total sample) = 1.6 (95% CI: 1.01 to 2.6) RR (match controls) = 1.4 (95% CI: 0.8 to 2.4)				Delirious: 39/71 Non-delirious: 14/41
Furlaneto (2007) ⁴⁴	Prospective cohort	Orthopedics (hip fracture)	Emergency	85	80.26	83.5	N/A	CAM	Dementia (0.43)	24 mth 48 mth	(OR) 1.35 ^a (95% CI: 0.69 to 2.64) (HR) 1.83 (no confidence intervals reported)	(HR) 1.28 (95% CI: 0.66 to 2.47)		X	Delirious: 9/25 ^b Non-delirious: 16/60 ^b Delirious: 15/25 ^b Non-delirious: 24/60 ^b
Jung (2006) ³³	Prospective cohort	Urology (TURP)	Elective	417	72.2	0	N/A	DSM-IV	Not reported	In hospital	N/A ^c				Delirious: 3/33 Non-delirious: 0/384
Kawaguchi (2006) ⁶⁹	Prospective cohort	Orthopedics (spine surgery)	Elective	341	59.2	45	N/A	CAM	Not reported	13 mth	N/A ^c				Delirious: 2/13 Non-delirious: 0/328
Minden (2005) ⁵⁹	Prospective cohort	Vascular	Elective	35	67.5	22	N/A	CAM, MDAS, Chart notation	Beck Depression Index (avg=8.4)	6 mth	4.17 (95% CI: 0.24 to 65.32)				Delirious: 2/8 Non-delirious: 2/27
Edelstein (2004) ⁶⁶	Prospective cohort	Orthopedics (Hip fracture)	Emergency	921	N/A	79	0.51	DSM	Dementia (0.03)	12 mth	2.4 (95% CI: 1.1 to 4.9)				Delirious: 47 Non-delirious: 674 *specific event rates not reported (99 total deaths)

^a calculated using STATA 10.0 (OR with Cornfield approximation using cci command)^b calculated using the predicted percentages reported in the text (Furlaneto et al 2007)^c exact CI's not possible with zero count cells

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First Author (Year)	Study Design	Surgery Type	Surgery Urgency	Study size (n)	Age (mean)	Gender (% female)	ASA (<=2)	Delirium Diagnosis	Baseline Cognitive Impairment	Mortality (length of follow-up)	Crude OR (unless otherwise specified)	Adjusted OR (unless otherwise specified)	Primary Analysis	Secondary Analysis	Event rates (for mortality)
Zakriya (2004) ⁶⁰	Prospective cohort	Orthopedics (Hip fracture)	Emergency	92	78.3	72	0.25	CAM	Dementia (0.11)	In hospital 6wk 3mth	N/A ^d 8.47 ^c (95% CI: 0.63 to 451.65) 5.0 ^c (95% CI: 0.87 to 34.23)				Delirious: 1/26 Non-delirious: 0/66 Delirious: 3/26 Non-delirious: 1/66 Delirious: 5/26 Non-delirious: 3/66
Lundstrom (2003) ⁶¹ ; Edlund ⁶² (2001)	Prospective cohort	Orthopedics (Hip fracture)	Emergency	71 ^c 67	79.1 ^b	77 ^b	N/A	OBS, DSM-IV	Prev. Delirium (0.11), Dementia (0.38)	36mth ^c 60mth	1.25 ^d (95% CI: 0.32 to 4.43) 3.12 ^d (95% CI: 0.91 to 11.12)				Delirious: 6/19 Non-delirious: 14/52 ^c Delirious: 12/19 Non-delirious: 17/48
Milisen (2001) ⁶³	Prospective before/after design	Orthopedics (Hip fracture)	Emergency	120	80 ^f 82 ^f	81	N/A	CAM	Dementia (0.15), Depression (0.11)	3mth	10.8 ^d (95% CI: 2.16 to 68.61)				Delirious: 7/26 ^c Non-delirious: 3/94 ^c
Nightingale (2001) ⁴² ; Holmes (2000) ⁴³	Prospective cohort	Orthopedics (Hip fracture)	Emergency	316 ⁱ	80.3 ^j	78 ⁱ	N/A	Geriatric Mental State (AGECAT); Delirium Rating Scale	N/A	6mth 2 year	3.16 ^d (95% CI: 1.80 to 5.54) 3.32 ^d (95% CI: 1.99 to 5.56)	RR= 2.88 ^g (95% CI: 1.76 to 4.72) HR= 2.404 ^h (95% CI: 1.66 to 3.48)		X	Delirious: 43/108 ^h Non-delirious: 36/208 ^h Delirious: 62/108 ^h Non-delirious: 60/208 ^h
Vieta (1993) ³⁴	Prospective cohort	Liver transplant	Elective	63	N/A	N/A	N/A	DSM	N/A	In hospital	8.17 ^c (95% CI 1.14 to 54.89)				Delirious: 4/8 Non-delirious: 6/55
Brannstrom (1989) ⁷⁰	Prospective cohort	Orthopedics (Hip fracture)	Emergency	35	78.2	80	N/A	OBS, DSM-III	Dementia (0.29), Schizophrenia (0.06)	6mth	N/A ^c				Delirious: 3/15 Non-delirious: 0/20

^a median^b Average of all patients in study.^c data from Edlund (2001)- (ref 2389)- same population as Lundstrom (2003)^d calculated using STATA 10.0 (OR with Cornfield approximation using cci command)^e data obtained from authors^f median; 80= intervention group, 82= non-intervention group.^g data from Holmes (2000)^h data from Nightingale (2001)- same population as Holmes (2000)ⁱ only included “well” and “delirious” patients.^j calculated from Table 1 in Holmes (2000)**Legend**

AGECAT- Automated Geriatric Examination for Computer Assisted Taxonomy

CAM- Confusion Assessment Method

CAM-ICU- Confusion Assessment Method- Intensive Care Unit

DOSS- Delirium Observational Screening Scale

DSM- Diagnostic and Statistical Manual of Mental Disorders

GDS- Geriatric Depression Scale

HR- Hazard Ratio

ICDSC- Intensive Care Delirium Screening Checklist

MDAS- Memorial Delirium Assessment Scale

MMSE- Mini-Mental State Examination

OBS- Organic Brain Syndrome

OR- Odds Ratio

SPMSQ- Short Portable Mental Status Questionnaire