

Appendix A

Collected delirium predictors within 24 hours after intensive care admission

Variable	Category	Description
Age (years)*	C	Continuous variable
Alcohol abuse*	D	Known medical history of alcohol abuse
Anaemia (L/L)*	C	Continuous variable of hematocrit, lowest value
APACHE-II score (per point)*	C	Calculated 24 hours after ICU admission
Coma*	Cat	No coma: RASS-4/-5 maximum 8 hours RASS-4/-5 for longer than 8 hours: 1. With use of medication 2. Other (i.e. intra cerebral bleeding, post-resuscitation) 3. Combination (1+2)
Dementia*	D	Known medical history of dementia
Admission category#	Cat	1. Surgical 2. Medical 3. Trauma 4. Neurology/neurosurgical
Dopamine use*	D	Any use of dopamine
Elevated hepatic enzymes (ASAT and ALAT in U/L)*	C	Level of alanine aminotransferase (ALAT) and aspartate aminotransferase (ASAT), highest absolute value
Epidural catheter*	D	Any use of an epidural catheter
Fever (in C°)*	C	Continuous variable, highest absolute value
Hyperamylasemia (U/L)*	C	Continuous variable, highest absolute value
Hyperbilirubinemia (umol/L)*	C	Continuous variable, highest absolute value
Hypertension*	B	Medical history of hypertension
Hypocalcaemia (mmol/L)*	C	Continuous variable, lowest absolute value
Hyponatraemia (mmol/L)*	C	Continuous variable, lowest absolute value
Hypotension*	B	Symptomatic, resulting in treatment, or systolic blood pressure < 80 mmHg
Infection*	D	Proven or strong suspicion of infection for which antibiotics were started
Lorazepam use*	D	Any use of lorazepam (oral or parenteral)
Metabolic acidosis*	B	pH <7.35 with bicarbonate <24mmol/L
Morphine use*	Cat	No morphine: no use of any morphine Cumulative use of any form of morphine: 1. 0.01-7.1mg 2. 7.2-18.6mg 3. 18.7-331.6mg
Respiratory disease*	D	Chronic obstructive pulmonary disease, cor pulmonale, pneumothorax, hemothorax, thorax trauma
Sedative use*	D	Any use of propofol, midazolam, lorazepam or combination
Urgent admission#	D	Unplanned intensive care admission
Urea (mmol/L)*	C	Continuous variable, highest value in blood

C= continuously B=binary D=dichotomized Cat.=categorical

Risk factors based on systematic review* or potential risk factors derived from Dutch National Intensive Care Evaluation database #

Appendix B

Prevalence rate of risk factors and delirium incidence rates in these groups

Dichotomized variables	Percentage patients in development cohort (N=1613)	Delirium incidence rate in the specific group
Alcohol abuse	3.3% (53)	60.4% (32/53)**
Coma	20% (323)	69% (223/323)**
1. Medication	78.6% (253/323)	62.8% (159/253)
2. Miscellaneous	6.5% (21/323)	85.7% (18/21)
3. Combination	15.2% (49/323)	93.9% (46/49)
Dementia	0.5% (8)	87.5% (7/8)**
Admission category:		
1. Surgical	62.6% (1010)	15% (152/1010)
2. Medical	22.3% (360)	43.1% (155/360)**
3. Trauma	5% (80)	47.5% (38/80)**
4. Neurology/neurosurgical	10.1% (163)	40% (66/163)**
Dopamine use	0.2% (3)	0% (0/3)
Epidural catheter	5.1% (83)	0.6% (9/83)
Hypertension	30.6% (494)	26.3% (130/494)
Infection	14.9% (241)	58.1% (140/241)**
Lorazepam use	0.6% (9)	33.3% (3/9)
Metabolic acidosis	18.2% (294)	58.8% (173/294)**
Morphine use:	54.8% (884)	19.7% (174/884)
1. 0.01-7.1mg/24hrs	8.5% (75)	1.6% (14/884)
2. 7.2-18.6mg/24hrs	63.1% (558)	8.1% (72/884)
3. 18.7-331.6mg/24hrs	28.4% (251)	10% (88/884)
Respiratory disease	31.5% (508)	37.8% (192/508)
Sedative use	23.9% (386)	62.4% (241/386)**
Urgent admission	52.8% (852)	38.3% (326/852)**

** Delirium incidence rate for the variable was >50% higher than the incidence rate of the total group (=25.5%)

Appendix C

Prevalence of the PRE-DELIRIC risk factors in each cohort

Risk variable	Development study (N=1613)	Temporal validation study (N=549)	External validation study (N=894)
Age mean in y (SD)	62 (\pm 15)	62 (\pm 15)	65 (\pm 14)
APACHE-II score (SD)	15 (\pm 6)	15 (\pm 6)	18 (\pm 7)
Coma (%)			
1. Medication induced	253 (15.7)	82 (14.9)	273 (30.5)
2. Miscellaneous	21 (1.3)	7 (1.3)	8 (0.9)
3. Combination	49 (3.0)	40 (7.3)	58 (6.5)
Admission category (%)			
1. Surgery	1010 (62.6)	340 (61.9)	507 (57.0)
2. Medical	360 (22.3)	123 (22.4)	297 (33.2)
3. Trauma	80 (5)	18 (3.3)	30 (3.4)
4. Neurology/ neurosurgery	163 (10.1)	68 (12.4)	60 (6.7)
Infection (%)	241 (14.9)	70 (12.8)	245 (27.4)
Metabolic acidosis (%)	294 (18.2)	84 (15.3)	220 (24.6)
Morphine use			
1. 0.01-7.1mg/day	75 (4.6)	143 (26.0)	44 (4.9)
2. 7.2-18.6mg/day	558 (34.6)	147 (26.8)	24 (2.7)
3. >18.6mg/day	251 (15.6)	11 (2.0)	291 (32.6)
Sedation (%)	386 (23.9)	184 (33.5)	543 (60.7)
Urea (mmol/L) median [IQR]	7.0 [5.0-9.0]	7.6 [5.7-10.2]	7.5 [5.5-11.2]
Urgent admission (%)	852 (52.8)	232 (42.3)	495 (55.4)

Data are presented as mean (SD), unless mentioned otherwise

Appendix D

Figure A: Calibration plot of the development model

Figure B: Calibration plot of the temporal validation model

Figure C: Calibration plot of the external validation model



