

Current awareness of delirium in the intensive care unit: a postal survey in the Netherlands

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ABSTRACT

Background: Delirium in the ICU can compromise the recovery process, prolong ICU and hospital stay and increase mortality. Therefore, recognition of delirium is of utmost importance.

Methods: To ascertain current attitude pertaining to delirium in critically ill patients a simple questionnaire was sent to all intensive care units (ICUs) throughout the Netherlands.

Results: Seventy-five questionnaires were sent and 44 returned. A delirium protocol was present in the majority of cases (n=35, 80%), although implementation had occurred in only 22 ICUs (50%). The reported general incidence of delirium varied widely (<10-75%), but most participants thought it to occur in >25% of ventilated patients (n=33, 75%) and in patients older than 70 (n=38, 86%). Most participating centres reported that they could certainly (n=9, 20%) or most certainly (n=22, 50%) identify delirium. A geriatrician or a psychiatrist predominantly diagnosed delirium (n=30, 68%), while a diagnostic instrument such as the CAM-ICU was used in a minority of cases (n=11, 25%). A geriatrician or a psychiatrist was consulted when patients were agitated (n=40, 90%), or when routine pharmacological treatment had failed (n=40, 91%).

Conclusion: In the Netherlands, delirium is considered an important problem in the ICU, although its incidence is estimated to be low by the ICU team. The diagnosis of delirium is most frequently established by a geriatrician or psychiatrist after consultation, while diagnostic instruments are infrequently used. Efforts should be undertaken to implement delirium protocols and a routinely applied diagnostic instrument in the ICU.

KEYWORDS

Delirium, diagnostic instrument, CAM-ICU, ICU, postal survey

INTRODUCTION

Patients in the intensive care unit (ICU) are at increased risk for development of delirium. Factors such as age, multiple-system illnesses, comorbidities and the use of psychoactive medications all increase the risk.¹ Up to 60 to 80% of mechanically ventilated ICU patients eventually develop delirium.² During ICU stay, the presence of this syndrome is associated with a higher morbidity, such as a prolonged length of stay in the ICU, cognitive decline at follow-up months to years later, and even mortality.²⁻¹¹

Delirium is defined as an acute change or fluctuation in mental status, combined with disorganised thinking or an altered level of consciousness.¹² However, the presence of these symptoms may be easily overlooked because of its fluctuating nature.¹³ Pandharipande *et al.*² reported that as many as 32 to 66% of cases remain unrecognised by the managing physicians and nurses. In view of the high incidence and high mortality in combination with the under-recognition of delirium, a recent report of the Dutch Healthcare Inspectorate¹⁴ recommended that care of patients with delirium should be markedly improved and also that assessment of delirium by validated diagnostic instruments should be part of routine management. Implementation of a diagnostic instrument will increase awareness of delirium and, hopefully, initiate a thorough search for an underlying cause or explanation to answer the

question why delirium symptoms are present in a patient and initiate treatment.

In this study we aimed to determine the current attitude towards delirium in ICUs in the Netherlands.

METHODS

In June 2007, an anonymous questionnaire was sent to the nursing staff of all non-paediatric ICUs with more than five beds suitable for mechanical ventilation in the Netherlands. The nurses were specifically asked in a covering letter to discuss the survey with the medical director and have him edit and/or complete the questionnaire. After three months all ICUs that had not yet responded to the questionnaire were contacted by telephone and if required, the questionnaire was sent a second time.

A questionnaire was developed containing four parts (see appendix A for details);

1. Demographic questions regarding the hospital and ICU settings.
2. Questions pertaining to the presence and implementation of some kind of delirium protocol.
3. Questions addressing the clinical importance of treatment of delirium judged by the ICU team.
4. Questions pertaining to the role of a geriatrician or psychiatrist in establishing the diagnosis delirium.

STATISTICAL ANALYSIS

Analysis was performed on anonymous data using the Statistical Package for the Social Sciences (SPSS) version 14 (Chicago IL, USA). Categorical data were presented in percentages. Data are presented in a descriptive way. Proportions were compared using χ^2 analysis or Fisher's exact test if applicable.

Results

Questionnaires were sent to 75 ICUs. A total of 38 ICUs spontaneously returned the questionnaire, with an additional six after contacting the non-responsive units by telephone. This resulted in a total of 44 returned questionnaires (59%). Four hospitals turned out to have less than five beds suitable for mechanical ventilation at the time of the survey, 29 hospitals had 5 to 15 beds, three hospitals had 15 to 20 beds and eight hospitals had more than 20 beds available for mechanical ventilation. Eight ICUs were located in academic hospitals and 36 ICUs were located in non-academic hospitals. All ICUs had a daily meeting with other disciplines.

Presence of a delirium protocol

A delirium protocol was present in the majority of hospitals ($n=35$, 80%). Seven out of the eight (88%) academic ICUs reported having a delirium protocol and 78% (28 out of 36) of the non-academic ICUs. However, practical implementation of a delirium protocol was reported in only 22 ICUs (50%). Although all ICUs with less than five beds reported the implementation of a delirium protocol, only one academic ICU (13%) and 16 non-academic ICUs (44%) implemented such a protocol routinely in daily care. No difference was found in implementation when academic and non-academic hospitals were compared. Treatment of delirium was judged clinically important by 72% of the ICU teams (table 1).

Clinical judgment of delirium by the ICU teams

The estimated incidence of delirium varied widely from less than 10% to 75%. When delirium is present, most participants estimated this to occur in more than 25% of ventilated patients ($n=33$, 75%) and in patients older than 70 ($n=38$, 86%) (table 2). Most centres reported that they could certainly ($n=9$, 20%) or most certainly ($n=22$, 50%) identify delirium (table 3). No difference was found with respect to the findings when academic and non-academic hospitals were compared. The diagnosis of delirium was

Table 1. The presence, implementation and importance of a delirium protocol in the ICU

		All centres (n=44)	Academic ICUs (n=8)	Non-academic ICUs (n=36)
Presence of a protocol (n,%)	Yes	35 (80%)	7 (88%)	28 (78%)
Implementation of a protocol (n, %)	Yes	11 (25%)	2 (25%)	9 (25%)
	No	17 (39%)	1 (13%)	16 (44%)
	Sometimes	7 (16%)	3 (38%)	4 (11%)
	Partly	4 (9%)	1 (13%)	3 (8%)
	Not known	5 (11%)	1 (13%)	4 (11%)
Importance of delirium, treatment and delirium ICU protocol by medical staff (n, %)	Very important	13 (30%)	4 (50%)	9 (25%)
	Important	19 (43%)	1 (13%)	18 (50%)
	Neutral	5 (11%)	2 (25%)	3 (8%)
	Not very important	3 (7%)	0 (0%)	3 (8%)
	Not important	4 (9%)	1 (13%)	3 (8%)

Table 2. Incidence of delirium during ICU admittance

		All centres (n=44)	Academic ICUs (n=8)	Non-academic ICUs (n=36)
Percentage of patients developing delirium during ICU admittance (n, %)	< 10%	4 (9%)	0 (0%)	4 (11%)
	10-25%	11 (25%)	0 (0%)	11 (31%)
	26-50%	10 (23%)	3 (38%)	7 (19%)
	51-75%	10 (23%)	3 (38%)	7 (19%)
	76-100%	2 (5%)	0 (0%)	2 (6%)
	No answer	7 (16%)	2 (25%)	5 (14%)
Percentage of mechanically ventilated patients developing delirium (n, %)	<10%	3 (7%)	0 (0%)	3 (8%)
	10-25%	2 (5%)	0 (0%)	2 (6%)
	26-50%	18 (41%)	3 (38%)	15 (42%)
	51-75%	7 (16%)	2 (25%)	5 (14%)
	76- 00%	7 (16%)	1 (13%)	6 (17%)
	No answer	7 (16%)	2 (25%)	5 (14%)

Table 3. Recognition, diagnosing delirium and checking for delirium

		All centres (n=44)	Academic ICUs (n=8)	Non-academic ICUs (n=36)
Recognition of delirium (n, %)	Certainly	9 (20%)	3 (38%)	6 (17%)
	Most certainly	22 (50%)	3 (38%)	19 (53%)
	Neutral	7 (16%)	0 (0%)	7 (19%)
	Not always	3 (7%)	1 (13%)	2 (6%)
	Totally not	1 (2%)	0 (0%)	1 (3%)
	No answer	2 (5%)	1 (13%)	1 (3%)
Diagnosing of delirium (n, %) (multiple answers possible)	Geriatrician/psychiatrist	30 (68%)	5 (63%)	25 (69%)
	ICU nurse	37 (84%)	8 (100%)	29 (81%)
	CAM-ICU	11 (25%)	1 (13%)	10 (28%)
	Clinical impression	25 (57%)	6 (75%)	19 (53%)
	Delirium-O-Meter	5 (11%)	2 (25%)	3 (8%)
	Trained ICU nurse	11 (25%)	4 (50%)	7 (19%)
	Other methods	9 (20%)	1 (13%)	8 (22%)
Checking for delirium (n, %)	Once a day	2 (5%)	0 (0%)	2 (6%)
	3 times a day	14 (32%)	3 (38%)	11 (31%)
	>3 times a day	8 (18%)	0 (0%)	8 (22%)
	No check	12 (27%)	3 (38%)	9 (25%)
	Don't know	1 (2%)	1 (13%)	0 (0%)
	No answer	7 (16%)	1 (13%)	6 (17%)

established by the attending nurses at the bedside in 84% of cases, whereas consultation of specially trained nurses was sought in 25% of cases, a geriatrician or psychiatrist in 68% of cases and using own experience in 57% of cases. A diagnostic instrument such as the Confusion Assessment Method for the ICU (CAM-ICU) was used in only a minority of cases (n=11, 25%). During the clinical judgement of delirium the degree of sedation was judged by using the Ramsay score (n=28, 64%) or the Richmond Agitation and Sedation Scale (RASS, n=9, 20%). The frequency of checking for the presence of delirium varied from never (n=12, 27%) to more than three times a day (n=8, 18%). This was not different in academic or non-academic hospitals. Delirium was predominantly treated with haloperidol (n=32, 73%), while non-pharmacological measures such as regulation of the sleep-wake cycle (n=25, 57%), incorporating the family in the ICU treatment (n=25, 57%), or improving the patient's feelings of safety (n=25, 57%) were also taken frequently (all measures taken together: n=25,

57%). Participants reported that delirium has a great impact on the duration of mechanical ventilation (n=39, 89%), the length of ICU stay (n=41, 93%), the mortality (n=32, 73%), the long-term cognitive function (n=17, 39%) and costs (n=41, 93%).

Role of a geriatrician or a psychiatrist in diagnosing delirium

A geriatrician was present in 30 hospitals, while he attended the daily ICU multidisciplinary meeting in only one hospital. A psychiatrist was present in all hospitals, but never attended the daily ICU multidisciplinary meeting. A geriatrician was consulted when patients were agitated (n=15, 34%) or when routine pharmacological treatment had failed (n=12, 27%). Worth mentioning is that 75% of the academic ICUs never consulted a geriatrician. A psychiatrist was consulted when patients were agitated (n=25, 57%) or when routine pharmacological treatment had failed (n=28, 64%) (table 4).

Table 4. *The role of a geriatrician or psychiatrist in ICU patients*

	All centres (n=44)	Academic ICUs (n=8)	Non-academic ICUs (n=36)
When is a geriatrician consulted (multiple answers possible)			
Every patient >70 year	2 (5%)	1 (13%)	1 (3%)
Agitated patients >70 years	9 (20%)	1 (13%)	8 (22%)
Agitated patients <70 years	6 (14%)	1 (13%)	5 (14%)
Whenever delirium was noticed using diagnostic instrument	3 (7%)	1 (13%)	2 (25%)
Patients with sleep disorders	2 (5%)	0 (0%)	2 (5%)
Routine pharmacological treatment fails	12 (27%)	2 (25%)	10 (28%)
Patient with cognitive disorders	8 (18%)	1 (13%)	7 (19%)
Never	17 (39%)	6 (75%)	11 (31%)
When is a psychiatrist consulted - (multiple answers possible)			
Every patient >70 years	1 (2%)	0 (0%)	1 (3%)
Agitated patients >70 years	13 (30%)	2 (25%)	11 (31%)
Agitated patients <70 years	12 (27%)	2 (25%)	10 (28%)
Whenever delirium was noticed using diagnostic instrument	8 (18%)	1 (13%)	7 (19%)
Patients with sleep disorders	5 (11%)	1 (13%)	4 (11%)
Routine pharmacological treatment fails	28 (64%)	5 (63%)	23 (64%)
Patient with cognitive disorders	9 (20%)	1 (13%)	8 (22%)
Never	13 (30%)	4 (50%)	9 (25%)

DISCUSSION

This survey suggests that in the Netherlands delirium is considered an important problem. The estimated incidence varied widely but was overall thought to be low. In addition, most ICUs reported that they could certainly or most certainly identify a delirium, although delirium was most frequently diagnosed by a geriatrician or psychiatrist after consultation. In addition, because psychiatrists are only consulted if the patient is hyperactive, the presence of delirium might be underestimated because hypoactive forms of delirium can easily be missed.

These results are remarkable because Pandharipande *et al.*² demonstrated that critically ill patients are at great risk for development of delirium and incidence appears to be as high as 80%. Consequently, the most important step in delirium management is early recognition. Incorporation of delirium assessment into clinical practice in the ICU using a validated tool may improve patient care and this is also recommended in the guidelines of the Society of Critical Care Medicine (SCCM).^{15,16} In our survey most hospitals reported the presence of a delirium protocol. However, only a few Dutch ICU settings had really implemented the protocol into routine daily care. The Confusion Assessment Method for the ICU (CAM-ICU), which is a validated assessment tool for monitoring delirium in ICU patients,^{1,2,17,18} was used in only a minority of cases (25%). Our results extend comparable screening data by van Eijk *et al.*, who demonstrated that only 14% of all Dutch ICUs routinely monitored ICU delirium, and only 7% used a validated instrument.¹⁹ In contrast to their findings, the reported use of a validated instrument to detect delirium occurred most frequently in non-academic (28%) ICUs in comparison to its use in only one academic centre. However, the results are

difficult to compare, since van Eijk *et al.* did not define the clear distinction between level 2 and 3 hospitals. Since level 3 hospitals included not only academic hospitals but also large teaching hospitals in their study, results may in fact be quite comparable to our data. Also, their study relates to a simple questionnaire by telephone yielding only very simple data and is therefore far from a complete survey, although this is claimed by the authors. Despite these differences, the results are comparable to our data, i.e. implementation of a validated tool to detect delirium is low in Dutch ICUs.

In our survey, delirium was predominantly treated with haloperidol and non-pharmacological measures were also taken frequently. Haloperidol is recommended by the SCCM guidelines as the drug of choice.² The use of haloperidol seems to be associated with lower mortality in patients who are mechanically ventilated for more than 48 hours,^{3,20} although prospective data are still awaiting the results of ongoing trials.

Several limitations to our study should be mentioned. First, the response rate of participating centres was 59%. Although this is comparable to other previously performed surveys, this bares the question whether the results really reflect common attitude towards delirium in Dutch ICUs. However, we have no reason to think that responding centres represent a particular subset, also illustrated by the fact that the proportion of responding academic centres is comparable to responding non-academic centres. Also, we consider it hard to believe that implementation of validated delirium diagnostic instruments into daily critical care was considerably better in non-responding units when compared with ICUs that responded to our survey. Second, the results reflect awareness and approach to delirium in Dutch ICUs, which makes the translation to other countries and settings potentially difficult. However, the

lack of implementation of a validated delirium diagnostic instrument may be a phenomenon which applies in other countries as well.

CONCLUSION

Delirium is considered an important problem in Dutch ICUs, although its incidence is thought to be low. Diagnosis of delirium is most frequently established by a geriatrician or psychiatrist and a structural diagnostic instrument was used in only a few hospitals. Efforts should be undertaken by critical care nurses and physicians to implement a delirium protocol and a routinely applied diagnostic instrument into daily care to improve the recognition of delirium in ICU patients.

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