



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Predicting delirium after a stroke

Citation for published version:

Makin, SDJ & Wardlaw, J 2013, 'Predicting delirium after a stroke' *Journal of Neurology, Neurosurgery & Psychiatry*, vol. 85, pp. 357. DOI: 10.1136/jnnp-2013-305379

Digital Object Identifier (DOI):

[10.1136/jnnp-2013-305379](https://doi.org/10.1136/jnnp-2013-305379)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

Journal of Neurology, Neurosurgery & Psychiatry

Publisher Rights Statement:

This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 3.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/3.0/>

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Predicting delirium after a stroke

Stephen D J Makin,¹ Joanna Wardlaw²

Clinicians treating patients with stroke will be familiar with delirium: a syndrome characterised by the rapid onset of disorganised thought, inattention and altered level of consciousness, with a characteristically fluctuant course. Limited data suggest that up to a quarter of patients with stroke admitted to hospital are affected at some point.¹ In addition to being distressing for patients and carers, delirium doubles the risk of death and dependency.²

If diagnosed correctly, delirium can be treated by searching for precipitating factors such as infection, altering predisposing factors such as medication and taking steps to reduce sensory impairment.³ However delirium is easily missed, partly due to its characteristic fluctuant course, which is especially concerning as if delirium is not detected on admission to hospital, then the risk of death may be increased eightfold.⁴

Patients with stroke are particularly likely to have one or more of the known risk factors for delirium,⁵ including cognitive impairment, visual impairment, infection and dehydration. Diagnosis may be more difficult as a change in mental state may be missed in a patient with aphasia or other speech disorder.

Oldenbeuing *et al*⁶ describe a tool to predict the risk of developing delirium after an acute stroke. This is the first score to predict the risk of delirium specifically after stroke. As it is derived from a patient's age, NIHSS and the stroke subtype, it can be calculated on the day of admission.

¹Division of Clinical Neuroscience, University of Edinburgh, Edinburgh, Mid Lothian, UK; ²University of Edinburgh, Edinburgh, UK

Correspondence to Dr Stephen D J Makin, Division of Clinical Neuroscience, University of Edinburgh, Bramwell Dott Building, Western General Hospital, Crewe Road South, Edinburgh, Mid Lothian EH4 2XU, UK; stephen.makin@ed.ac.uk

This score has some limitations: first it cannot be applied to non-disabled patients, as patients discharged from hospital less than 2 days after stroke were excluded from the validation study. Second it may not be generalisable to other stroke units, as it was derived and validated in two stroke units in the Netherlands; as practice and resources may differ between countries, healthcare providers and regional and local hospitals, this score should be validated in other clinical settings before its widespread use.

The score may have a number of uses: it could identify those patients at particular risk of delirium for a future trial of preventative medication; it could aid nursing staff in ensuring that patients at risk of delirium are nursed in a easily visible space; and it could identify patients at risk so they may be screened for modifiable predisposing factors.

O'Hanlon³ described that the effective management of delirium is a complex process requiring input at many levels, including identification of the patient at risk. For this score to reduce the mortality from delirium, it will need to be adopted as part of a wider package including improved diagnosis and treatment.

However, if this score is introduced into routine practice without resources for screening, treatment and rehabilitation, it could become merely another page in the already lengthy bundle of paperwork that staff must complete when admitting a patient to a ward, which may reduce the time spent with patients. Future research is needed to identify effective interventions that improve the outcome for patients with delirium.

Contributors SDJM wrote the editorial, and JMW revised, edited and advised on content.

Competing interests None

Provenance and peer review Commissioned; internally peer reviewed.



OPEN ACCESS



Open Access
Scan to access more
free content

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 3.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/3.0/>

To cite Makin SDJ, Wardlaw J. *J Neurol Neurosurg Psychiatry* 2014;**85**:357.

Received 28 April 2013

Accepted 13 May 2013

Published Online First 13 September 2013



► <http://dx.doi.org/10.1136/jnnp-2013-304920>

J Neurol Neurosurg Psychiatry 2014;**85**:357.
doi:10.1136/jnnp-2013-305379

REFERENCES

- 1 Carin-Levy G, Mead GE, Nicol K, *et al*. Delirium in acute stroke: screening tools, incidence rates and predictors: a systematic review. *J Neurol* 2012;259:1590–9.
- 2 van Rijnsbergen MW, Oldenbeuing AW, Nieuwenhuis-Mark RE, *et al*. Delirium in acute stroke: a predictor of subsequent cognitive impairment? A two-year follow-up study. *J Neurol Sci* 2011;306:138–42.
- 3 O'Hanlon S, O'Regan N, MacLullich AM, *et al*. Improving delirium care through early intervention: from bench to bedside to boardroom. *J Neurol Neurosurg Psychiatry* 2014;85:207–13.
- 4 Kakuma R, du Fort GG, Arseneault L, *et al*. Delirium in older emergency department patients discharged home: effect on survival. *J Am Geriatr Soc* 2003;51:443–50.
- 5 Inouye SK, Charpentier PA. Precipitating factors for delirium in hospitalized elderly persons. Predictive model and interrelationship with baseline vulnerability. *JAMA* 1996;275:852–7.
- 6 Oldenbeuing AW, de Kort PLM, van Eck van der Sluijs JF. An early prediction of delirium in the acute phase after stroke. *J Neurol Neurosurg Psychiatry* 2014;85:431–4.



Predicting delirium after a stroke

Stephen D J Makin and Joanna Wardlaw

J Neurol Neurosurg Psychiatry 2014 85: 357 originally published online September 13, 2013

doi: 10.1136/jnp-2013-305379

Updated information and services can be found at:

<http://jnp.bmj.com/content/85/4/357.full.html>

These include:

References

This article cites 5 articles

<http://jnp.bmj.com/content/85/4/357.full.html#ref-list-1>

Open Access

This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 3.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/3.0/>

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections

Articles on similar topics can be found in the following collections

[Open access](#) (102 articles)
[Delirium](#) (33 articles)
[Memory disorders \(psychiatry\)](#) (1163 articles)
[Stroke](#) (1270 articles)
[Disability](#) (173 articles)

Notes

To request permissions go to:

<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:

<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:

<http://group.bmj.com/subscribe/>