

criteria; removing moderate risk criteria; amalgamating moderate and high-risk criteria; including lactate earlier in the pathway; and including neutropaenic sepsis in the high-risk pathway.

The complexity of the sepsis landscape has therefore resulted in the emergence of substantial variation in practice.

A standardised approach to sepsis

We established a regional sepsis stakeholder group through the Oxford Academic Health Science Network (AHSN) Patient Safety Collaborative in February 2016. The group comprises clinicians with responsibility for sepsis care in 25 partner organisations and other colleagues with an interest in improving sepsis care.

To improve the consistency of care for adult patients at risk of sepsis we aimed to agree a standardised approach to sepsis management across the acute hospital trusts within the Oxford Academic Health Science Network (AHSN) region.

Developing a standardised pathway

There was a consensus that the complexity of the NICE management algorithm for adults in hospital presents a challenge to real world implementation, without good evidence to support that complexity. Through a series of stakeholder meetings (Fig 1) we simplified the algorithm using the UK Sepsis Trust template. Key principles included:

- > simplicity to ensure reliable implementation
- > incorporation of successful existing tools (early warning scores [EWS], 'red flag' sepsis criteria and the sepsis six care bundle)
- > ensuring a generic pathway applicable to trusts with varying resources.

The final pathway greatly simplified the NICE algorithm by removing amber criteria (see link below). This was justified on the basis that any patient meeting the EWS criteria for pathway entry merits an assessment including blood tests.

Implications and impact

The simplified regional pathway was implemented by all six participating acute hospital trusts in 2017. We believe a benefit of this regional approach is more consistent, safer care for sepsis patients, particularly by rotating medical staff. Collaborative working provides peer support, reduces variance throughout trusts, reduces workload locally, supports shared learning, and facilitates collection of consistent regional data. ■

Acknowledgements

We would like to thank all members of the Oxford AHSN Patient Safety Collaborative Sepsis Stakeholder group for their active engagement and input in the development of the regional sepsis pathway. The pathways may be downloaded from:

www.patientsafetyoxford.org/clinical-safety-programmes/sepsis/sepsis-resources/sepsis-resources-pathways/

JO MURRAY

*Patient safety programme manager,
Oxford Academic Health Science Network, Patient Safety
Collaborative, Oxford, UK*

ANDREW BRENT

*Consultant in infectious diseases and general medicine, and
regional clinical lead for sepsis
Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

References

- 1 Dellinger RP, Levy MM, Rhodes A *et al*. Surviving sepsis campaign: international guidelines for management of severe sepsis and septic shock: 2012. *Crit Care Med* 2013;41:580–637.
- 2 Royal College of Physicians. *National Early Warning Score (NEWS): Standardising the assessment of acute illness severity in the NHS. Report of a working party*. London: RCP, 2012.
- 3 National Institute for Health and Care Excellence (NICE). *Sepsis: recognition, diagnosis and early management*. NICE, 2016.
- 4 Inada-Kim M, Mackenzie P, Brain P, O'Brien V, Nsutebu E. The National Patient Safety Collaborative Sepsis Cluster Guidance Survey. The AHSN Network, 2016.

Are we doing enough to detect paroxysmal atrial fibrillation after an acute ischaemic stroke? Survey of cardiac monitoring methods among stroke physicians

Detecting paroxysmal atrial fibrillation (PAF) is challenging given the intermittent and often asymptomatic nature of the condition. Stroke secondary prevention guidelines acknowledge that longer duration of monitoring (>24 hours) after an ischaemic stroke is likely to yield a higher frequency of PAF, but are unable to provide precise guidance on 'how long' to monitor after stroke.^{1,2} A recent systematic review suggested increased AF detection among unselected acute ischaemic stroke patients with prolonged methods of monitoring (>24 hours) but the precise method, duration and time to intervention following a stroke remains unknown.³

In the absence of robust evidence-based guidelines and the existence of advanced cardiac monitoring devices, the main objective of the survey was to explore cardiac monitoring strategies to detect PAF after an acute ischaemic stroke among stroke specialists. A questionnaire (nine questions) was created using SurveyMonkey and sent through a mailing list of the British Association of Stroke Physicians (BASP). The questionnaire

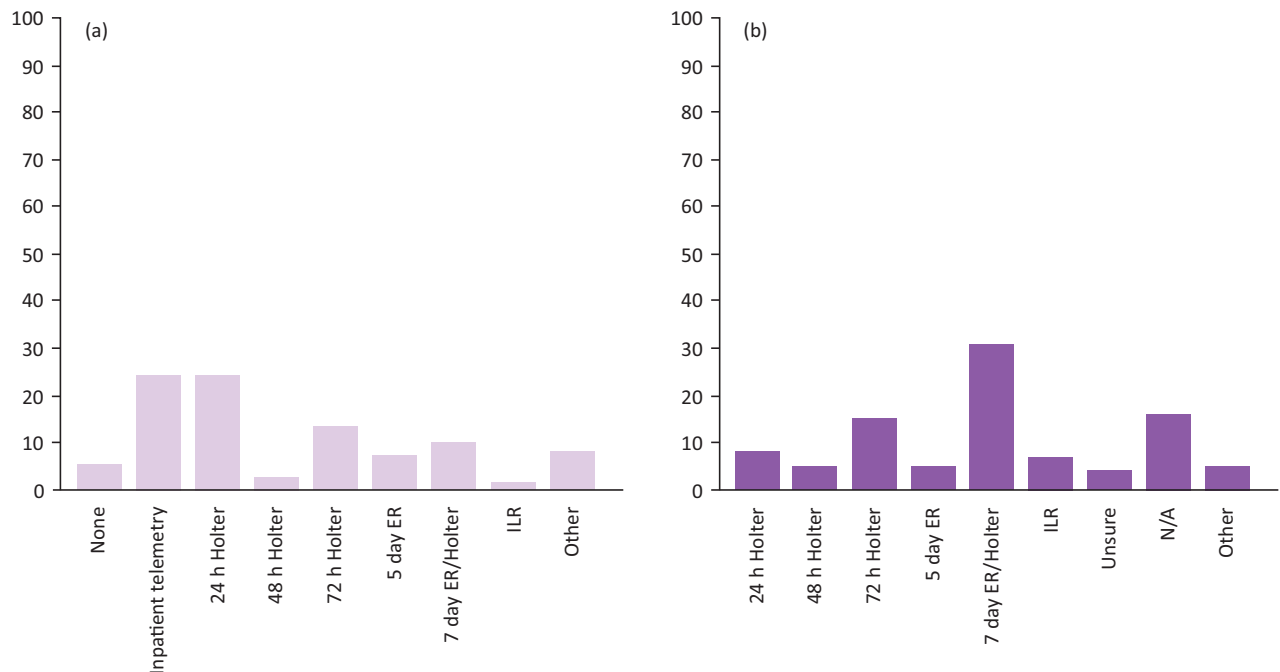


Fig 1. (a) Clinician practice: monitoring methods used immediately after an acute stroke (%); (b) Clinician practice: repeat cardiac monitoring used after an acute stroke (%). ER = event recorder' ILR = implantable loop recorder

included questions on demographic data of the respondents, physician perception and current practice in cardiac monitoring after an acute stroke.

A total of 101 completed responses (71 UK hospitals) were obtained accounting for about 16% of BASP membership. The majority of the respondents (84%) were consultants. Of respondents, 49% perceived that PAF is likely to be detected early after an acute stroke (<72 hours). The majority preferred non-invasive cardiac monitoring (84%), most commonly with either inpatient telemetry (33%), 7 day Holter or event recorder (ER) (23%) as opposed to invasive monitoring (16%). In actual practice, if no prior history of AF or new AF was detected on 12-lead electrocardiogram, 94% of responders used non-invasive cardiac monitoring, most commonly with inpatient telemetry (27%), 24 hour Holter (20%) or 72 hour Holter (15%). Six percent do not use any form of cardiac monitoring (Fig 1a). The interval from stroke onset to initial monitoring was most commonly >14 days (30%), while only 22% of respondents felt there was no delay or <24 hours delay. Eighty percent would repeat monitoring if PAF was not detected (Fig 1b), most commonly with a 7 day Holter (28%).

The results of the survey and evidence from existing research suggests it is still unclear as to 'when', 'where', 'how' and 'how long' to monitor stroke patients. There appears to be wide-spread variation in approach to cardiac monitoring immediately after an acute stroke with non-invasive cardiac monitoring (≥ 24 hours) the preferred method. The lack of consensus seen reflects the relative absence of research in this area and therefore lack of

robust national or international guidelines on prolonged cardiac monitoring after an acute ischaemic stroke. Two studies which applied early cardiac monitoring within 48 hours⁴ and 7 days⁵ of stroke symptom onset reported new PAF in 18% and 14% respectively, suggesting PAF could perhaps be 'front-loaded', emphasising the importance of early cardiac monitoring. In the context of current financial constraints in the NHS, and absence of robust guidelines in AF detection strategies after an acute stroke, there is an urgent need for further research in this area and a consensus-based approach on how best to monitor patients after an acute stroke. ■

PHILIP THOMAS

Senior clinical fellow, stroke medicine,
Greater Manchester Comprehensive Stroke Centre,
Salford Royal NHS Foundation Trust, Manchester, UK

CRAIG SMITH

Consultant stroke physician,
Greater Manchester Comprehensive Stroke Centre,
Salford Royal NHS Foundation Trust, Manchester, UK

AMIT KISHORE

Consultant and honorary senior lecturer in stroke medicine,
Greater Manchester Comprehensive Stroke Centre,
Salford Royal NHS Foundation Trust, Manchester, UK

References

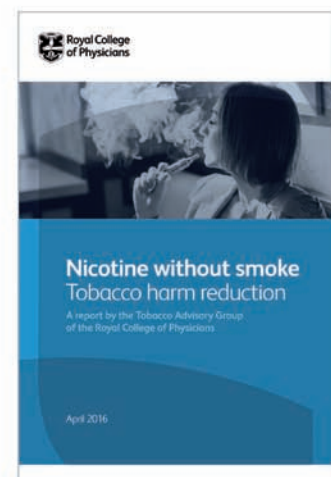
- 1 Kirchof P, Benussi S, Kotecha D *et al.* 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur J Cardiothorac Surg* 2016;50:e1–e88.
- 2 Intercollegiate Stroke Working Party Group. *National Clinical Guidelines for stroke*. London: RCP, 2016.
- 3 Kishore A, Vail A, Majid A *et al.* Detection of atrial fibrillation after ischemic stroke or transient ischemic attack: a systematic review and meta-analysis. *Stroke* 2014;45:520–526.
- 4 Higgins P, MacFarlane PW, Dawson J *et al.* Noninvasive cardiac event monitoring to detect atrial fibrillation after ischemic stroke. *Stroke* 2013;44:2525–31.
- 5 Wachter R, Gröschel K, Gelbrich G *et al.* Holter-electrocardiogram-monitoring in patients with acute ischaemic stroke (Find-AFRANDOMISED): an open-label randomised controlled trial. *Lancet Neurol* 2017;16:282–90.

'Smoking is the biggest avoidable cause of death and disability, and social inequality in health, in the UK.'

Nicotine without smoke Tobacco harm reduction

Since e-cigarettes became available in the UK in 2007, their use has been surrounded by medical and public controversy. This new 200-page report from the Royal College of Physicians examines the science, public policy, regulation and ethics surrounding e-cigarettes and other non-tobacco sources of nicotine, and addresses these controversies and misunderstandings with conclusions based on the latest available evidence.

ISBN 978-1-86016-600-6 £15 including p+p or free to download



**Royal College
of Physicians**

Download the report:
rplondon.ac.uk/nicotine

Order a copy:
shop.rcplondon.ac.uk