Co-Editors

Dr Tim Cooksley
Editor-in-Chief
Consultant in Acute Medicine
Manchester University Foundation Trust and
The Christie

Professor Prabath Nanayakkara
Associate Editor
Head of Acute Medicine,
VU University Medical Center,
Amsterdam, Netherlands

Associate Professor Ben Lovell
Associate Editor
Consultant in Acute Medicine
University College London Hospitals

Editorial Board

Professor Mikkel Brabrand
Clinical Associate Professor
Department of Emergency Medicine,
University of South Denmark

Professor Mark Holland
Consultant Acute Physician
Salford Royal Hospital and Visiting Professor
Health and Social Care,
University of Bolton

Professor Dan Lasserson
Professor of Ambulatory Care,
University of Warwick

Dr Nick Murch
Consultant in Acute Medicine,
Royal Free London NHS Trust

Dr Chris Subbe
Consultant in Acute, Respiratory & Critical
Care Medicine
Bangor University & Ysbyty Gwynedd Hospital

Dr Louise van Galen
Research Fellow in digital health
Nanyang Technology University/VU University
Medical Centre

Dr Louella Vaughan
Senior Clinical Research Fellow
Nuffield Trust

Dr Liz Lees-Deutsch
Nurse Consultant in Acute Medicine,
University Hospitals Birmingham

Acute Medicine

Guest Editorial

Risk Stratification in Acute Medicine

Michiel Schinkel

The Nobel-winning physicist Niels Bohr famously said that "prediction is very difficult, especially if it's about the future." Nevertheless, the prediction of rapid clinical deterioration has acquired its place in Acute Medicine. Time-urgent medical emergencies can benefit significantly from early detection when treatment delays increase the risk of death. Many Early Warning Systems (EWS) have thus been developed to stratify those at high risk of deterioration. It has been demonstrated that different types of EWS, including the Modified Early Warning Score (MEWS), National Early Warning Score (NEWS), and NEWS2, are clinically useful when identifying rapid deterioration. However, as we are inundated with risk stratification tools, it can be hard to decide which we should or should not use.

In this edition of Acute Medicine, Kellett et al. study a recently proposed risk stratification tool: the respiratory rate and oxygenation (ROX) index.[1] The tool is uniquely simple, quick, and viable even in low-resource settings. As the name suggests, the ROX index can be calculated using just two values and only needs the input of an oximeter. With AUCs between 0.84 and 0.90 for death within 24 hours in various cohorts of this retrospective study, the discriminatory performance seems to be comparable to the currently available tools.

With yet another tool added to the repertoire, we must carefully consider several factors when choosing the one that best fits our needs. As acute physicians manage patients in various settings, scoring systems with adequate performance in multiple environments may be preferable. The NHS recommendation to uniformly use the NEWS2 across the prehospital, emergency department, and ward setting aligns with this preference.

As the performances of risk stratification tools change dramatically in different settings, it is essential to validate them in our environment and for our goals before considering their use. We need acceptable sensitivities and negative predictive values not to miss cases of rapid deterioration, but the tools also need to be relatively specific. One of the problems with many EWS is that their positive predictive values if often low, with causes false alarms and an additional burden on the physicians. Typically, easy-to-use tools include few variables and run the risk of poor performance. But even if their performance would be slightly worse, simple tools could sometimes be

Acute Medicine is indexed in PubMed and EMBASE and cited in Medline

Published by
Rila Publications Ltd.
73, Newman Street,
London W1T 3EJ, UK
Tel: +44(0)20 7637 3544
Website: www.acutemedjournal.co.uk

Design & Production
Georgina DaCambra

Copyright © 2022
Rila Publications Limited
All rights reserved. No part of this publication may be reproduced without prior permission, in writing,from the publishers. The data, opinion and statements in this journal are those of the contributor(s) and not necessarily endorsed by the publisher, sponsors, editor and editorial board. Accordingly their respective agents accept no liability for the consequences of any such inaccurate or misleading data, opinion or statement.

Enquiries
Circulation and Foreign
Distribution rights contact
Rila Publications Limited

Advertising
Tel: +44 (0)20 7631 1299

Subscription Rates:
Personal
Print & Online: *UK £100* *Overseas £140*
Online Only: *Personal:£60* *Students: £45*
Institutional/Library
Print Only: *UK £140* *Overseas £180*
Online Only: *£500*

ISSN: 1747-4884

© 2022 Rila Publications Ltd.

preferable, as their implementation rates will be higher. As discussed by Kellett and colleagues, the ROX index certainly falls in that category.[1]

A significant limitation to risk stratification tools is that they are only developed to identify those at increased risk for deterioration or short-term mortality. Ideally, we would also like to know whether the patient will respond favourably to treatments to mitigate this risk. This information will further help allocate resources appropriately in times of high demand.

In the past decade, the widespread adoption of electronic health records has created the possibility for EWS to flourish. As these systems now collect vast amounts of data, new opportunities arise to personalise and refine risk stratification with advanced computational approaches. As long as these tools are not yet ready for clinical implementation, we should seek to optimise the use of currently available tools, in line with the investigation by Kellett et al.

Risk stratification tools have become indispensable in Acute Medicine. We need to be very selective in which tools we use and how they fit our workflows and patient populations. It is important to focus on simplicity and generalisability across acute and emergency care services at this point.

References

1. Kellett J, Sikakulya FK, Nickel CH (2022) The prediction of early mortality by the ROX index of oxygenation and respiratory rate in diverse Canadian and Ugandan cohorts of unselected patient: a post-hoc retrospective analysis of 80,558 patient observations. Acute Med. 2022; **21(2)**: 68-73

© 2022 Rila Publications Ltd.