Reviewer's report

Title: Recognizing Acute Delirium As part of your Routine [RADAR]: A validation study

Version: 4  
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Reviewer: Judith Dyson

Reviewer's report:

This is a well written valuable paper. There was one major compulsory issue for me which needs addressing prior to publication. The authors conclude that “RADAR is efficient reliable sensitive” (line 533). This is poorly demonstrated by the statistics cited. For example, line 248 identifies a Kappa ranging from 0.3 indeed this is recognised in lines 365 onward. Is inter-rater reliability insufficient therefore? The agreement between RADAR and CAM seems low at times (line 374 and table 4). PPV is demonstrated to be low also (line 392 and table 5). Acknowledgement of high levels of false-positive (line 497). Yet at times the discussion suggests values are in accordance with general expectations (line 473). My opinion is that this needs a little bit of unpicking. Are these values sufficient and if so according to what parameters? I was left with the impression by the end of the paper that the RADAR is quick and easy (just seven seconds to complete) but that it doesn’t really measure what it is designed to measure. It suspect that some of this incongruence can be addressed by citing usual expectations of the parameters of the tests conducted within the context they have been conducted and support with references. It may be that the concluding remark needs to be more tentative and suggest further work to be done.

There were a number of small errors and questions begged for me - discretionary revisions. Examples include; DSM in full the first time and referenced. There seems to be an inaccuracy between lines 76 and 77 where the authors write diagnostic accuracy less than adequate and a specificity of 98 to 100% is cited (which appears perfectly adequate). I was a bit confused by the barrier of time being cited as a reason for the CAM being inadequate in practice and by way of justifying the RADAR. The authors cite two SRS recommending tools that require administration of 5 to 10 minutes (lines 84-85); earlier (line 69) this is exactly the time the CAM takes. If this is considered too lengthy (despite recommendations) this needs to be clear and the basis of this assertion made explicit. I am not familiar with the role “licenced practical nurse” (line 140) suggest brief definition. It would be useful to identify the clinical role of the research assistant (192) as they are making clinical judgements. For this validation study people with a history of psychiatric illness were excluded. Were those with learning disabilities included or excluded in the study? I see the tool was designed for (line 154) and tested with only nurses. Is this a tool that can be used by other healthcare practitioners? Observation of the patient during medicine round informs the scoring of the RADAR. How is it applied if the patient does not need medicines (at all or at one of the times the test is to be completed)? Given that delirium
requires psychiatrist diagnosis, how is the tool to be used? I suspect to monitor change but this was not explicit within the text.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.