PEER REVIEW HISTORY

This paper was submitted to BMJ Quality and Safety but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open. The paper was subsequently accepted for publication in BMJ Open.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Multi-modal Observational Assessment of Quality and Productivity Benefits From The Implementation of Wireless Technology For Out of Hours Working
AUTHORS	John D Blakey, Debbie Guy, Carl Simpson, Andrew Fearn, Sharon Cannaby, Petra Wilson and Dominick E Shaw

VERSION 1 - REVIEW

REVIEWER	Robert Wu University Health Network

GENERAL COMMENTS	Comments to the Author Shaw and coauthors provide a description and evaluation of an implementation of a wireless communication system to improve management of "out of hours" calls from nurses to doctors in the care of hospital patients. It is an interesting study and is written clearly. They use a multiple methods to evaluate the intervention. Major comments: 1. Very specific to UK and Europe with Hospital at Night system. This could be explained further for a larger audience. I am still not clear of the added value of the coordinator in managing "out of hours" calls with or without the intervention. 2. Use of incident reporting as a major outcome. Given the well known issue of gross underreporting of incident, I would either drop this as an outcome or mention it briefly along with length of stay changes. While the result was significant, numbers were very low. While the authors are commended in using a framework to establish their intervention, it should be noted that the critical incident analysis described by Westbrook is quite different that use of incident reporting. While the authors that causality can not be inferred in the discussion, it is misleading describing it in the results. 3. Focus on coordinator activity. While there were nurse and doctor interviews and surveys, there was little focus on nurse or physician actions. While the system appeared to reduce coordinator workload, we do not have observations of what occurred with nurses and physicians, the other major players in this intervention. This should be added as a limitation. Minor comments:

	Some issues with references (typo ref 4) Should add information comparing this to the existing literature of wireless communication (O'Connor et al and others) and describing what this study adds. More information on the intervention would be helpful in the methods. What were the devices? Why was the medical grade wireless network required? 40 smartphones and 4 tablet computers are mentioned in the discussion. Who received these?

The manuscript was reviewed by a second person for BMJ Quality and Safety, but they declined to give permission for their comments to be published.

VERSION 1 – AUTHOR RESPONSE

We thank the reviewer for noting the study is interesting and well-written.

Major 1: We acknowledge this paper is “specific to UK and Europe”(sic) in its particular focus, but the challenge of staffing hospitals out of hours is a global issue. We have made changes both attempt to further clarify the Hospital at Night System and to emphasise the generalizability of the approach. We also seek to clarify the role of the co-ordinator further to emphasize this is a national directive rather than a local choice.

Major 2: We agree that incidents are under-reported and as the reviewer notes we do clearly say we are not inferring causality in the discussion. We have made alterations to emphasize this limitation and to highlight our emphasis is that the new system is non-inferior in this regard. We do not agree that our results section is misleading as it clearly presents the numbers of incidents that were reported and our supplementary flow diagrams present the distribution of type of incident in great detail.

Major 3: We agree with the reviewer that we did not systematically and directly record nurse or physician actions prior to the implementation of the system so no unbiased comparisons could be presented. This is a limitation of the study and we acknowledge this explicitly in the revised discussion section.

Minor 1: A typographical error in reference 4 has been corrected. We apologise for the formatting errors introduced through our use of EndNote which we have now addressed.

Minor 2: The reviewer asks for a discussion of other papers considering wireless working. We have introduced reference to these e-mail based adjuncts but emphasize that the system presented replaces and augments current practice rather than supports it.

Minor 3: We have added a sentence to declare the aspects of the Cisco network that we took advantage of. We feel the use of phones and tablet PCs is clear in the introduction but have clarified our discussion statement with respect to their carriage.

VERSION 2 – REVIEW

REVIEWER	
REVIEW RETURNED	

THE STUDY	
RESULTS & CONCLUSIONS	
REPORTING & ETHICS	
GENERAL COMMENTS	

REVIEWER	
REVIEW RETURNED	

THE STUDY	
RESULTS & CONCLUSIONS	
REPORTING & ETHICS	
GENERAL COMMENTS	

VERSION 2 – AUTHOR RESPONSE