

Reply to commentary on “Pulse oximetry screening for critical congenital heart defects”

Ewer, Andrew

DOI:
[10.1159/000502015](https://doi.org/10.1159/000502015)

License:
None: All rights reserved

Document Version
Peer reviewed version

Citation for published version (Harvard):
Ewer, A 2019, 'Reply to commentary on “Pulse oximetry screening for critical congenital heart defects”', *Neonatology*. <https://doi.org/10.1159/000502015>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:
© Karger Publishers

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

Letter

Re: Commentary on “Pulse Oximetry Screening for Critical Congenital Heart Defects”

Andrew K Ewer,¹ Shakila Thangaratinam,² Nieves Plana,^{3,4} Javier Zamora^{2,4}

¹ Institute of Metabolism and Systems Research, University of Birmingham, Birmingham UK

² Barts and the London School of Medicine and Dentistry and Queen Mary University of London, London UK

³ Preventive Medicine Department, Principe de Asturias Hospital, Alcala de Henares, Spain

⁴ Clinical Biostatistics Unit, Ramón y Cajal Hospital (IRYCIS), Madrid, Spain.

Short Title: to be used as running head

Re: Commentary on “Pulse Oximetry Screening for Critical Congenital Heart Defects”

*Corresponding Author

Full name Professor Andrew Ewer

Department Institute of Metabolism and Systems Research, University of Birmingham.

Birmingham Women’s and Children’s Hospital

Edgbaston

Birmingham, UK

Tel: 0121

Fax:

E-mail: a.k.ewer@bham.ac.uk

Keywords: Newborn, pulse oximetry screening, critical congenital heart defect

Dear Editor,

We read with interest, the commentary on our Cochrane systematic review on the test accuracy of pulse oximetry screening (POS) for critical congenital heart defects in newborn infants¹ by Oddie and McGuire.² We are grateful to the authors for appraising our work and welcome the wider dissemination of Cochrane reviews into the test accuracy of diagnostic tests. As the authors report, our data do support consensus recommendations for implementation of routine POS however we would like to make two comments in order to clarify the interpretation of our data. i) a minor but important point is that a high specificity indicates a low false positive rate rather than a low false negative rate as stated in the commentary; false negatives will influence the sensitivity not the specificity. ii) Of greater concern, we feel that the statement ‘...analysis showed that screening before 24 h after birth is less accurate than after 24 h’ is erroneous and somewhat misleading. This interpretation may lead to misguided decision-making in terms of the screening algorithm adopted. It is true that the false positive rate for POS is higher if screening takes place in the first 24 hours after birth however this is only half of the story. The sensitivity of POS (i.e. the ability to identify the target condition) was not significantly different between the 2 time periods – although sensitivity in the first 24 hours was 79.5% compared with 73.6% after 24 hours. More importantly and as we reported, most studies do not take into account the fact that many babies with a CCHD may present with symptoms within the first 24 hours before screening takes place¹ and therefore do not become part of the screened cohort. As previous studies^{3,4} have reported, up to 50% of babies with CCHD may present prior to screening and up to 20% of these present with acute cardiovascular collapse - the consequence that screening is trying to prevent. This scenario does not occur in studies in which babies are screened earlier.⁵ In addition, babies with non-cardiac conditions such as respiratory and infective problems that are also detected by POS tend to present in the first 24 hours and although these are technically false positives, the clinical benefit of early detection of babies with these illnesses is clear.

Disclosure statement

The authors have no conflict of interest to declare

Funding source

None

Author contributions

AKE wrote the first draft. ST, MP and JZ edited and approved the final version

References

1. Plana MN, Zamora J, Suresh G, Fernandez-Pineda L, Thangaratinam S, Ewer AK. Pulse oximetry screening for critical congenital heart defects. *Cochrane Database of Systematic Reviews* 2018, Issue 2. Art. No.: CD011912. DOI: 10.1002/14651858.CD011912.pub2.
2. Oddie S, McGuire W Commentary on “Pulse Oximetry Screening for Critical Congenital Heart Defects” *Neonatology* 2019 Published online: May 27 2019 DOI: 10.1159/000496621
3. de Wahl Granelli A, Wennergren M, Sandberg K, Mellander M, Bejlum C, Inganäs L, et al. Impact of pulse oximetry screening on detection of duct dependent congenital heart disease: a Swedish prospective screening study in 39 821 newborns. *BMJ* 2009;338:A3037.
4. Riede FT, Worner C, Dahnert I, Mockel A, Kostelka M, Schneider P. Effectiveness of neonatal pulse oximetry screening for detection of critical congenital heart disease in daily clinical routine - results from a prospective multicenter study. *Eur J Pediatrics* 2010;169:975-81.
5. Ewer AK, Middleton LJ, Furmston AT, Bhojar A, Daniels JP, Thangaratinam S, *et al.* Pulse oximetry as a screening test for congenital heart defects in newborn infants: the PulseOx test accuracy study. *Lancet* vol. 378, (9793) 785-794.