

## Peer Review File

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### **Reviewer A**

- 1 The purpose of this review is inadequately defined. The authors delineate multiple conditions, such as neonatal asphyxia, premature PDA, and intrauterine growth retardation, which constitute a considerably overlapping cohort in neonatal ultrasound assessment. For instance, both systolic and diastolic dysfunctions have been documented across all conditions, and even when the diagnosis is identical, additionally, these disease groups are influenced by numerous factors, such as birth weight, gestational age, and maternal complications. Primarily, it is imperative to explicate the objective of this review in a lucid manner.***

This paper was not intended as a review, either as a narrative or scoping review. It has been written more in the style of an Annotation using as examples important and relatively common conditions faced by the neonatal clinicians, both working within a tertiary centre and elsewhere. It was initially written up as a companion paper to the article published in Translational Pediatrics by Vijayashankar et al. (39). After an initial summary describing the normal fetal to neonatal transition we thought it would be helpful to focus on a limited number of conditions that may affect that transition. It was never intended as a comprehensive review which probably would not serve the main purpose of the Journal geared towards a more general audience.

- 2 Allow me to explicate Table 1. The table encompasses diverse echocardiographic indices; however, the depiction is scattered, and the emphasis is unfocused. When summarizing the echocardiographic indices during the neonatal phase, it is crucial to ascertain the index that serves as the primary metric for evaluating cardiac function in neonates, the normal values, and the error range. Collating such information would undoubtedly prove advantageous***

Your comments have been noted. However it would be difficult to provide normal values and error margins as that varies as to whether the infant is born at term or prematurely. We believe Table 1 provides an overview of the detailed point of care ultrasound studies that can be done in the newborn though it is not expected that all will be trained or indeed have the time or need to carry out such an intensive array of investigations. The Editors may feel it more appropriate to shift Table 1 into an Appendix. Normal values have now been provided in a revised Table 2.

- 3 A multitude of indices utilized to evaluate cardiac function during the neonatal phase differ from those in the adult domain. As a result, neonatal echocardiographic indicators exhibit several issues unique to the neonatal period. For instance, due to the rapid heart rate, each index requires a different frame rate setting, and the echo***

*depth necessitates the use of a probe with a distinct frequency than that employed for adults. During a review of neonatal echocardiographic indices, it is imperative to address such concerns.*

The reviewer has indeed echoed our concerns in trying to provide normal values with all the variations that may occur within the newborn period involving both premature and term infants. Providing further detailed commentary accordingly is beyond the scope of this paper. It is generally understood that there are important differences between neonatal and adult echocardiographic examinations.

- 4** *While Figure 1 presents an intriguing study, it appears too focused for inclusion in a review of neonatal cardiac function assessment. When evaluating a range of diseases, it is important to provide a comprehensive summary of the relevant studies and present them as clear evidence.*

We accept that Figure 1 is too focussed and are willing to remove it accordingly if that is the decision of the Editors.

### **Reviewer B**

#### ***Major comments:***

***- The as “What is new” described points do not seem to be really new. A lot of them have been discussed in previous review or original articles by the same authors.***

We accept that some of the issues described in this paper have been previously reported. However we have attempted in this paper to summarise the important aspects of the haemodynamic changes that may occur in newborns which may be helpful for those involved in their care.

***- The article is very general when it comes to the echocardiography which feels like it was meant to be one of the main points in this review. I felt that this article wanted to give explicit advice which echocardiographic parameters make most sense in a clinical setting especially for physicians who are no experts in echocardiography. Table 2 is quite a good summary to guide a focused echocardiography in certain diseases or states. On the contrary, Table 1 seems very unfocused in listing a huge variety of parameters.***

We accept that comment and have so stated in the text. Table 2 selects out those specific echocardiographic parameters which may be helpful in the clinical situations described.

#### ***Main questions regarding Table 1:***

***o Do the authors really perform all of this in all patients or could they give more***

***advice which parameter is especially helpful in the assessment of neonates cardiovascular hemodynamic.***

As stated above, the multiple echocardiographic parameters noted in Table 1 describe what can be done. As suggested in A2 it may be more appropriately included as an Appendix. We have added to the text that it may be beyond the scope of even expert neonatologists to carry out many of the listed parameters accepting appropriate training is required and without the time constraints so common in a busy nursery.

Table 2 more appropriately lists those parameters that are more helpful in studying the conditions reviewed.

***o A very important question is how good the authors regard those parameters in neonates and premature neonates as most of those values come from adult cardiology. Are there reference values for those parameters for premature neonates and mature neonates? What is the advice of the authors of how to interpret all those parameters that one can assess? Do they make sense as a single value or are they most useful as follow up values.***

As stated above 2A, the reference values vary between the premature and term infants. In Table 2 reference values have been added wherever possible.

***o In some points the table has flaws e.g. a PW-doppler does not report or give a volume. One cannot estimate a stroke volume solely from a doppler. I assume the authors refer to the technique where you additionally measure the diameter of the LVOT to calculate a stroke volume. In the line about strain/strain rate a figure is mentioned without a number.***

The additional measure of the diameter of LV outflow is required to calculate the stroke volume. The table has been corrected accordingly

***o Tabel one should be focused and provide, if possible, reference values or literature where to find them.***

See above comment 2A

***- The authors say that the fetal shunts close rapidly. Maybe it would be helpful for some readers to have an explanation of usual closure times of an arterial duct or foramen ovale. It is not that it happens within minutes or in the first hours after birth***

Appropriate additions to the text have been made.

***- Line 128-130: Do the authors refer this statement to premature neonates or do they***

*think that this is also true for term neonates?*

*- When mentioning Figure 1 in the text it would be helpful to have the according panel mentioned.*

An appropriate comment has been added to the text. As mentioned above Figure 1 may be removed all together if that is the view of the Editors.

*- It seems that a lot of the information in the paragraph about the patent ductus arteriosus has already been published in a review paper of the authors.*

That may well be so but the findings from a number of studies has been summarized for this paper.

*Minor commens:*

*- Line 66, there is a parenthesis that does not seem to belong there*

*- Line 86 should be “from” instead of “form”*

*- Line 93 should it be “converted”*

All the above have been corrected.

### **Reviewer C**

*This is an interesting paper with much potential. However, I do have some concerns. The manuscript is referred to both as a narrative review and a scoping review. These are quite different. A blank Prisma checklist is provided at the end of the paper without much context.*

*I recommend that the authors decide on whether to present this as a scoping review or a narrative review. If it is a scoping review, a more thorough methodology and search strategy ought to be*

As stated above A1 this is not a review but hopefully a companion paper to one previously published in the Journal.