

## Neonatology

<b>Manuscript:</b>	NEO-0-0-0
<b>Title:</b>	Neonatal autopsy: a 21st century approach?
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<b>Keywords:</b>	Autopsy, Magnetic resonance imaging, Neonatal intensive care, Post-mortem
<b>Type:</b>	Letter

**Title:**

**Neonatal autopsy: a 21<sup>st</sup> century approach?**

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## **1. Text:**

Dear Editor,

We read with interest the article in *Neonatology* by De Sevaux et al., entitled “The Value of Autopsy in Neonates in the 21<sup>st</sup> Century” [1]. We agree that autopsy consent rates are declining, and offering parents an accurate, non-invasive method alongside or instead of autopsy is to be encouraged [2]. However, we have significant reservations about the study and manuscript in terms of its scientific rigor, methodology and the conclusions drawn from them.

The authors retrospectively analyzed clinical notes and autopsy findings for neonatal deaths on a Dutch NICU, and they concluded that autopsy has an important role, but over half of the findings would be unlikely detected with post mortem MRI [1]. Of the reported 298 deaths in 2785 infants on their NICU between 2008 and 2015, only 117 underwent autopsy (of which 100 were eligible for the study). It is likely that patients who underwent autopsy were those in whom the cause of death was unclear, or whose parents were counselled directly towards the benefits of autopsy, as they form less than 40% of the target population. There is no information provided regarding changes in clinical practice or sample distribution over this time. Clinician bias is a significant factor in directing consent for autopsy [3,4] and thus, a small sample of approximately 12 deaths per year over an 8 year period is unlikely to be an accurate reflection of local or national clinical practice, where the true yield in an unselected NICU population is likely to be much lower.

We were also extremely surprised by the speculative and retrograde nature of post-mortem MRI assessment in this study, *in the absence of any imaging performed*. The assessment was presented as a subjective opinion of a single radiologist on the basis of a retrospective case-based review [1], which is unusually simplistic and highly unscientific when considered against a background of published evidence of actual post-mortem MRI experience [5,6]. The most rigorous scientific studies will be double-blinded clinical trials, with imaging reported blinded to clinical findings, double reported or consensus read, in order to minimise subjectivity, training bias, retrospective assumptions and subjective impressions.

We are also concerned by the “vast” but unquantified experience of the radiologist, particularly as “post mortem MRI is not a standard procedure” in their unit [1]. Our experience is that training radiologists in post-mortem imaging is fundamental to accurate image interpretation, and typically requires 200 cases or more [6]. They do not cite their own experience in this field; neither (to the best of our knowledge) does the group participate in national or international post-mortem imaging guidelines groups [7,8]. Crucial data is also missing, such as full disclosure regarding what diagnoses were deemed potentially diagnosable (or not). This level of detail is precisely what is required to counsel parents appropriately regarding the likelihood of imaging being useful on an individual case basis. Some of their examples listed as “unlikely detectable” were atrial septal defect (ASD), pneumonia and hypoplasia of the ductus venosus. Data published in 2015 demonstrates that ASDs are commonly diagnosed [9,10], but we agree that sepsis is challenging [11], although certain infections (e.g. CMV) may have maternal or placental sequelae that do not require invasive autopsy.

We conclude that this study does not stand up to scientific scrutiny regarding the utility of post-mortem MRI. Its results cannot form the basis of wider implications or be used to found generalisations: this study only reports from a small, potentially biased population who did not in fact

undergo the imaging that it argues would not assist the diagnosis. There is growing scientific evidence to support post-mortem MRI, openly available for discussion and contribution across international forums [7,8]. We use this in our routine clinical practice to counsel all parents appropriately during bereavement [6,12]. We actively encourage others to consider the same approach, and participate in multicentre trials, international expert discussion and educational opportunities such that we can move forwards as a multidisciplinary profession.

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## **2. Statements:**

### **Disclosure Statement**

The authors have no conflicts of interest to declare.

### **Funding Sources**

SCS is supported by a Research Councils United Kingdom and United Kingdom Research and Innovation Fellowship, and Medical Research Council Clinical Research Training Fellowship (Grant Ref: MR/R00218/1). This award is jointly funded by the Royal College of Radiologists. OJA is funded by a National Institute for Health Research Career Development Fellowship (NIHR-CDF-2017-10-037).

This article presents independent research funded by the Medical Research Council, Royal College of Radiologists, National Institute for Health Research and the views expressed are those of the author(s) and not necessarily those of the aforementioned institutions, National Health Service or the Department of Health.