

2010

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Bewley, S., Díz-Rossello, J. L., & Mercer, J. (2010). Natural stem cell transplantation: interventions, nuances and ethics. *J. Cell. Mol. Med.*, *14*(12), 2840-2841. <https://doi.org/10.1111/j.1582-4934.2010.01199.x>

Available at: <https://doi.org/10.1111/j.1582-4934.2010.01199.x>

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Natural stem cell transplantation: interventions, nuances and ethics

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To the Editor:

We acknowledge Tolosa *et al.*'s comprehensive, interesting and timely article [1], which makes an excellent case for natural stem cell transplantation to occur at birth. They identify a host of benefits of the redistribution of infant's blood from the placenta to its body. The 'placental transfusion' is a major physiological event in the transition from foetal to neonatal life that should not be interrupted without good cause. So their recommendation that 'unnecessary excessive delayed clamping should be precluded in healthy term cord blood donors' was puzzling.

First, we were pleasantly surprised that neonates were described frankly as 'blood donors'. This concept has previously been avoided as cord blood stem cell harvesters usually describe 'blood that is left in the placenta' [2] rather than explicitly taken from the infant. Precious blood only remains in the placenta if forced by premature (early) cord clamping, an intervention with evidence of harm to the infant. In most countries, blood donation can only be accepted from adults; children are not legally allowed to become donors. Any and all consideration of blood donation, even if purportedly for the purpose of autologous stem cell collection for future use by the child itself, should be secondary to safety concerns for the infant. However, the authors did not discuss the need of parents to be informed about the *prima facie* right of infants not to donate blood that would otherwise belong to them and if taken could put them at risk.

Secondly, the description that 'the artificial loss of stem cells at birth could potentially impact later development and predispose infants to diseases ...' conflicts with the section that supports early clamping; leaving an impression that the authors disagree on the timing of cord clamping and whether blood should be in the infant or freezer. Without relevant expertise, they nevertheless promote clamping at a 'normal time' although there is no such thing. The only precise definition of 'early clamping' is any case

when it occurs before cessation of blood flow (assessed by umbilical artery pulsation) and the time should be accurately measured [3]. Calling something 'delayed' when not performed 'early' is ambiguous and pejorative. With present knowledge [4, 5] many recommend that clamping should routinely be performed after umbilical blood flow ceases [6]. We were bewildered by the newly formulated subcategory 'unnecessary excessive delay' where a misleading notion was introduced that promotes early clamping in all normal healthy newborns which may be harmful [7]. It is incorrect to present redistribution of blood from the placenta to the infant's body as superfluous physiology. The authors finally limit their recommendation of 'delayed' clamping 'to populations that have limited access to health care and presumed poor nutrition and those that choose not to bank cord blood for financial reasons'. We cannot precisely define which infants are at risk of iron deficiency even in wealthy settings or developed nations. This is incoherent with the rationale for the article and ethically unacceptable.

Finally, the acknowledgement section is mislabelled as it concerns conflict of interest (even if not financial) and this article paves the way to early clamping for cord blood banking.

As the authors themselves state, early clamping is '*without clear benefit and [has] no rationale to support it*'. There is no proven benefit of interrupting umbilical blood flow before its natural cessation. Until then, the only ethical bank recipient is the newborn infant.

Conflict of interest

The authors confirm that there are no other conflicts of interest.

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