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## Ethical issues in regenerative approaches in neonatology

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**R** egenerative therapies using stem cells (SC) are theoretical options in perinatal diseases. These are promising in inflammatory cascade or regenerative capacity in CNS and lung. However, ethical controversies emerge of its use when it comes to the methods used in its obtaining, being embryonic origin the most questioned. Actual research is based on the use of somatic mesenchymal stem cells (MSC) since they have less ethical conflicts. Development of embryonic cell in vitro aims to overcome this dilemma. Benefits today are potential. MSC ability to self-regeneration and pluripotency could provide replacement in brain and lung, but still oncogenic risk must be considered. In addition, its immunomodulatory role can decrease inflammation and increase tissue repair through a paracrine effect. Non-beneficial results using MSC's have been seen in cases of pulmonary embolism with endothelial damage when administered intravenously in myocardial infarction. From a psychological perspective, a reflection is needed mainly when SC is offered in the context of delivery, in which obtaining umbilical cord cells and/or placental tissue is easy. An informed consent considering high costs and uncertain benefits is needed to avoid encouraging expectations. Parents should have no limit to any attempt to improve the quality and life expectancy of their children. Regenerative therapy with SC in neonatology lacks of solid evidence to support its use in terms of efficacy and safety. However, ongoing research is promising. Further research is required. Therefore, conservative advising to parents is recommended to avoid creating false expectations based on MSC's.

## **Recent Publications:**

- 1. O'Reilly M and Thébaud B (2015) Stem cells for the prevention of neonatal lung disease. Neonatology 107(4):360-364.
- 2. Lanfranchi A, Porta F and Chirico G (2009) Stem cells and the frontiers of neonatology. Early Hum Dev. 85(10):S15-18.
- 3. Borghesi A, Cova C, Gazzolo D and Stronati M (2013). Stem cell therapy for neonatal diseases associated with preterm birth. J Clin Neonatol. 2(1):1-7.
- 4. Ramalho-Santos M and Willenbring H (2007) On the origin of the term stem cell. Cell Stem Cell 1(1):35-38.
- 5. Meng F, Meliton A, Moldobaeva N, Mutlu G, Kawasaki Y, Akiyama T and Birukova AA (2015) Asef mediates HGF protective effects against LPS induced lung injury and endothelial barrier dysfunction. Am J Physiol Lung Cell Mol Physiol 308(5):L452-L463.

## Biography

Hernan Villalon-Urrutia is a Physician, qualified Surgeon at Pontifical Catholic University of Chile in 1987. He is a Specialist in Paediatrics and Neonatology. He is Professor of Paediatrics at University of Chile. His research interest is in the field of Neonatology and early Parenting. He has presented more than 100 research papers in national and international conferences and publications.

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