

Max Vento Biocommentary

I am a neonatologist based in Valencia, Spain. I am director of the Neonatal Research Group at the Health Research Institute La Fe (IISLAFE), in Valencia. There I work in a multidisciplinary group devoted to research with a particular focus on the fetal to neonatal transition.

My decision to go to medical school was largely influenced by my parents. My father was an anesthesiologist and my mother a pediatrician so I grew up listening to discussions about their clinical sessions around the dinner table. Once I qualified as a doctor in the 1970s, another important early influence was Professor Manuel Moya at the University of Alicante, who introduced me to clinical and experimental research, especially in the rapidly expanding field of Neonatology. He supervised my experiments on calcium metabolism in a pregnant rat and offspring model that formed the backbone of my Ph.D.

I have had numerous important mentors along the way. Professor Ola Didrik Saugstad from the University of Oslo, Norway has undoubtedly been the most important in boosting my research career. His lecture at the annual congress of the Spanish Neonatal Society in 1991 about the new concept of '*free radical disease of the newborn infant*' had a great impact on me. We have since enjoyed a fruitful 30 year collaboration, both in the clinical and experimental field of oxygen free radicals in the neonatal period. Our work led to the widespread use of room air for resuscitation in the delivery room and supplemental oxygen during the NICU stay. Importantly, the effectiveness of room air for depressed newborn infants has allowed many non-profit organizations such as Medicines sans Frontiers or Helping Babies Breathe to develop simplified resuscitation algorithms that have been able to save thousands of lives in low-middle income countries.

One of the biggest lessons I have learnt from my research across the world is that obstetricians and neonatologists from low-middle income countries should actively participate in the design of randomized controlled trials performed in their countries in order to facilitate the translation of the results to their clinical environment. I also believe that nurses, parents, parental societies, and ethical advisors should also participate in the design of neonatal trials. We should also aim to include thousands of preterm infants in our studies by establishing global recruitment networks. The power limitation of our present studies hampers the applicability of the results of many randomized controlled trials.

I see huge promise in the use of artificial intelligence algorithms to personalize research into clinical conditions in neonatology and to scrutinize monitoring of clinical parameters to predict serious complications in the NICU. We need to develop new monitoring devices for early detection of conditions and we should enhance our genetic tools and omics-derived biomarkers for the diagnosis of complex conditions in the neonatal period.

I would encourage early career researchers to look for a mentor who leads a successful research group and get involved with them. Starting a research career on your own is almost impossible. Establish close relationships with other members of the group, especially with those who have a different academic background. Be prepared to travel and present your results at scientific meetings and try to spend some time abroad learning from different groups. Join scientific societies, such as the Society for Pediatric Research or the European Society For Paediatric Research and meet with colleagues working in our field and exchange ideas and research protocols.

I think that curiosity is probably the most essential attribute for anyone who wants a fruitful research career. Combining basic and clinical research with patient care requires a huge amount of dedication and often eats into your evenings and weekends. Those who are not prepared to face prolonged working hours will not be able to combine both activities. Finally, you must be patient.