The project Neocirculation started in October 2011. The project consists of a number of work streams, which were developed during the first 18 months of the project. The project has two aims: (1) to develop and study an age appropriate formulation of the drug Dobutamine for newborns and (2) to develop a new definition of neonatal shock. Dobutamine is a drug which is given to newborn babies with circulatory failure after birth. Currently the drug is given off label and off licence.

The project partners immediately embarked on the submission of the Paediatric Investigation Plan (PIP) to the European Medicines Agency (EMA). After discussions with the scientific advice committee and the Paediatric Committee the PIP was granted in December 2012 by the EMA. The clinical studies will be performed on preterm infants of 24 to <33 weeks gestation and start later this year. A waiver was granted for near-term and term infants. In parallel, work began on the development of the new drug formulation which contains less antioxidants. After extensive testing the drug formulation was ready for large-scale production by month 18.

Another work-package is concerned with testing the new drug formulation in juvenile animal models. These studies will help with the new definition of neonatal shock. The protocols for these studies were developed and ethical favourable opinion was obtained. The studies will be performed from month 19 onwards.

The laboratory work of the project focuses around two aspects: (1) to investigate the pharmacokinetic and pharmacodynamic (PK/PD) properties of the new age appropriate formulation of Dobutamine and (2) to identify possible genetic polymorphisms which might influence the drug response in infants. The laboratory assays for the PK/PD were developed for very small blood samples. The genetic blood bank was set up. Both will be ready for the start of the clinical studies.

A subgroup of the consortium focussed on choosing relevant blood tests and non-invasive monitoring methods such as ultrasound of the heart, which could assist in assessing the circulatory status of the ill infant. The EMA committees
also assisted in this choice process. The subgroup has developed standard operating procedures for the measurements. A course manual for the use of ultrasound (superior vena cava flow measurement) was developed. Training courses for this method have begun.

The project partners worked extensively on project management as a whole, management of the clinical studies and development of the website (www.neoncirculation.eu). The Ethics and Data Monitoring Committee and Expert Advisory Boards were established. These have close links with the parent’s organisation European Forum for the Care of the Newborn Infant.