Fluid Balance in RDS

There is a natural contraction of the Extra cellular fluid volume (ECFV) in newborn babies. This is caused by a diuresis that follows a naturesis and lung function improves after this diuresis[1]. This natural contraction of ECFV is delayed in babies who have surfactant deficient RDS.[2] Newborn babies have an impaired ability to excrete sodium thus sodium supplementation should start only after they have had a diuresis which will be borne out by weight loss and increased urine output.[3] In neonates who have been given natural surfactants this diuresis may occur sooner [8]. . Fluid input for premature infants should be carefully restricted so that physiological needs are met without allowing significant dehydration. This practice could be expected to decrease the risks of patent ductus arteriosus and necrotizing enterocolitis--and perhaps the overall risk of death--without significantly increased risk of adverse consequences (Bell 2001 (Cochrane Review))[4,5,6,7].

Daily weighing and regular (twice daily) measurement of serum sodium are important to achieve this particularly in the smallest babies (<1000g).

SUMMARY and level of evidence

1. Give sodium only after a post-natal diuresis A

2. Restrict fluids to meet physiological requirements without allowing dehydration A

3. Weigh daily and measure sodium twice daily D

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Blood transfusions to replace Blood loss

1. Preterm infants with RDS become anaemic due to blood sampling and blood transfusions may be necessary to correct anaemia and or hypotension. However there are significant adverse effects of transfusions (4) that not only include infectious complications but also the risk of fluid overload, skin injury due to tissued IV cannulae, and a possible increased risk of ROP and CLD. Therefore transfusions should be limited to the minimum number required for the infants' optimal well-being. It is useful to note that simple approaches such as reducing the frequency of blood sampling are effective[5]. Replacement therapy should be based on a transfusion guideline which is relatively restrictive to prevent unnecessary transfusion[6]. Measuring the volume of blood lost and replacing after a certain volume is only useful if the infant's status is also taken into consideration when deciding whether to transfuse. Dividing a single donation of red cells into satellite packs reduces donor exposure[1]. Routine use of frusemide is not recommended.[2] Recombinant human erythropoietin is not effective in reducing transfusion requirements of sick neonates who require frequent blood sampling[3,4] .

Transfusion guidelines for neonate and older children – British Committee for Standards in Haematology Transfusion task force

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Summary and Level of Evidence

1.	Using a restrictive blood transfusion regimen is a useful way to decrease the number of transfusions given	B
2.	Routine use of frusemide with blood transfusion is not recommended	B
3.	Recombinant EpO is not effective at reducing blood transfusions in the first two weeks after birth	A
4.	Dividing a single donation of red cells into satellite packs reduces donor exposure.	B