

## **Bristol Royal Hospital for Children**

### **Q&A regarding the outcomes of arterial shunt operations for congenital heart disease 1999 -2013**

#### **What is an arterial shunt?**

An arterial shunt is a surgical procedure used to treat certain specific heart defects in babies with congenital heart disease. This highly specialised procedure involves placing a tube between one of the arteries going to the arm and the pulmonary artery to improve blood flow to the lungs. For the purposes of data collection NICOR includes a range of operations including some which are highly complex and classifies them all as shunts.

#### **How common is this procedure?**

This is a relatively uncommon procedure. According to NICOR between 2000 - 2011, 198 shunts and shunt related procedures were performed in England; between 2010 - 2013, 27 procedures were performed at Bristol. The number of arterial shunt procedures carried out at Bristol has declined over recent years primarily because the team now favours performing a complete repair or using stents implanted in the cardiac catheterisation laboratory in suitable children even though they are very small. This means that shunts tend to be performed only on babies with high risk, single ventricle abnormalities.

#### **What data has NICOR published?**

NICOR has published an analysis of 30 day mortality data of the arterial shunt operations carried out since 1999 by all the centres that perform this procedure in the UK. The data is shown in a funnel plot chart which compares UK centres by volume using the average national mortality as a comparison.

#### **The 2010 – 2013 data suggests that Bristol has a higher than expected 30 day mortality rate for this specific procedure – is this true and if so why?**

This is a high risk procedure which is only carried out if it is deemed the best option for babies with some of the most complex types of congenital heart defects and there are several important factors to bear in mind when interpreting this outcome data.

Firstly, the total volume of cases included is small; this means small variations in one year can have a disproportionate effect on the overall statistics. Secondly, although the data has undergone some level of risk adjustment it does not take into account factors such as the severity of a baby's condition and complicating factors such as other conditions a child might be suffering from (e.g. their weight and if they were born prematurely). In addition, although Bristol has had excellent results for primary complete repairs for some of the conditions that previously would have been dealt with using a shunt, these improved outcomes are not reflected in the NICOR data as this data relates to an operation rather than the heart abnormality the operation was performed for.

#### **How many cases at Bristol is this 2010 – 2013 data referring to?**

This is a relatively rare procedure so the overall number of cases is very low – 27 babies of which 6 subsequently died, representing a 30-day survival rate of 77.8%. In several deaths the babies had

some of the additional risk factors outlined above, such as low birth weight, which are not considered in the figures.

**What is Bristol doing to continuously improve?**

Bristol operates a programme of continuous improvement to better understand and improve outcomes for patients. This includes auditing its own internal data (which also covers 2014 outcomes), and comparing it with NICOR data and learning from other centres to improve care. The Trust also identified that of the 6 babies who died following an arterial shunt, 2 did well during their hospital stay but died after they had been discharged. This has led to the Trust introducing a home monitoring programme for patients following this operation which has been extremely successful.