

# INTRAUTERINE GROWTH RESTRICTION, STILLBIRTHS AND PREVENTION

## BIRMINGHAM & SOLIHULL 2009-2011



### Introduction

Perinatal mortality reports repeatedly highlight the importance of fetal/intrauterine growth restriction (FGR, IUGR) as important risk factors [1]. This awareness has been aided by the findings of confidential enquiries [2] and analysis of sub-categories within perinatal mortality statistics [3].

### Prevalence of IUGR

**Table 1** Percentage of IUGR-affected pregnancies by LA ward

	West Midlands	Birmingham & Solihull NHS Cluster	Birmingham LA	Solihull LA	Birmingham Women's Hospital	City Hospital	Heartlands Hospital	Good Hope Hospital	Solihull Hospital
<b>Fetal growth restriction *</b>									
Birthweight <10th cust. centile									
Average	13.8%	13.5%	13.6%	12.6%	13.5%	15.5%	14.8%	11.9%	10.2%
Range <sup>b</sup>	(10.3% - 16.4%)	(10.2% - 15.5%)							

Source: PEER 2010

IUGR is defined as birthweight below the 10<sup>th</sup> birthweight-for-gestation centile, customised for maternal height, weight, ethnicity, parity and the sex of the newborn. It is influenced particularly by social deprivation and smoking

### Antenatal Detection (KPI definition: [www.pi.nhs.uk/rpnm/IfH\\_KPI\\_Evidence\\_Targets.pdf](http://www.pi.nhs.uk/rpnm/IfH_KPI_Evidence_Targets.pdf)).

Birmingham PEER data shows antenatal detection has increased from a baseline of 28.1% (2006/7) to 32.6% in 2010.

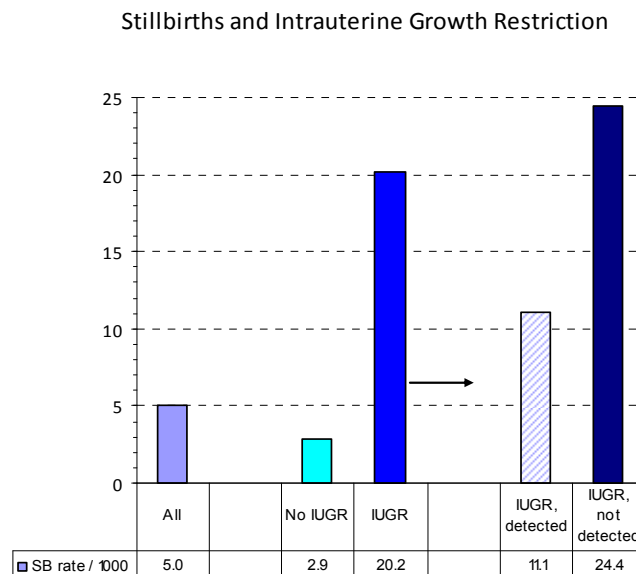
Data from the Birmingham CoGS project [4] confirms a similar increase, from 27.1 % (Pre-CoGS) to 33.5% post-CoGS (2010/11). For cases which are referred for investigation following suspicions arising from fundal height measurement, the detection rate is even higher, ranging from 50.0 to 70.5%.

These improvements are considered to have resulted from a concerted program in Birmingham, the foundations of which started in 2002/3, but which escalated with the CoGS project from 2009

- Implementation of customised growth charts (2002/3)
- Standardised case-note SGA audits in all Birmingham units, raising awareness (2006/7)
- Implementation of 'Antenatal detection of IUGR' as a KPI (2006/7)
- Report and feedback of confidential enquiry into stillbirths with IUGR (2007/8)
- Enhanced GROW training programme for all midwives and doctors (2007-ongoing)
- Standardised referral protocols agreed by the Regional Ultrasound Group (2008)
- Community Growth Scanning project (CoGS), improving referral pathways and access to investigation for high risk pregnancy (2009-11)

## IUGR and Stillbirth

Insight into the effect of intrauterine growth restriction (IUGR) and its detection on stillbirth has been possible following recent data linkage between the PEER database and the perinatal mortality register.



Source PEER 2009-11

Figure 1 shows stillbirth rates and IUGR in Birmingham and Solihull during 2009/10 (2 years), based on all 126 normally formed, singleton stillbirths during 25,333 deliveries to residents within the Cluster during this period.

The results show that:

1. Stillbirth rates are 7 times higher in pregnancies where the fetus is IUGR, compared to pregnancies where it is well grown (RR 7.1, CI 5.0-10.1);
2. Of pregnancies with IUGR, the risk of stillbirth is further increased to 24.4/1,000 when it is not detected, but half that when it is detected antenatally.

**This strong link between antenatal detection and reduced mortality rate, combined with the recent improved performance in detection, is consistent with the observed drop in perinatal mortality rates of babies with fetal growth restriction, as shown in the 2010 mortality report [3].** In the 30+ week analysis of that report, the improvement is demonstrated as being mostly due to a reduction of stillbirths at gestations where recognition and timely delivery was able to prevent fetal death due to growth restriction.

### Preliminary 2011 data.

The 2011 report has to await ONS Vital Statistics of denominators (all births), which become available in the second half of the calendar year. However births have been stable in Birmingham over the last three years and the nominators (stillbirths and neonatal deaths) are already available with high confidence of complete ascertainment in the regional perinatal mortality register.

#### **Preliminary analysis that the downward trend in stillbirths with IUGR continued and even accelerated in 2011:**

- There were 35 stillbirths with IUGR in Birmingham & Solihull – and the first time this number dropped below 45.
- There were 17 stillbirths with IUGR from 30+weeks – the first time this number dropped below 24.

Fig 2 and 3 illustrate the resultant 3 year trends for all stillbirths and for stillbirths with IUGR from 30 weeks.

**Fig. 2 - Stillbirth main groups, 3-year moving average  
Birmingham & Solihull NHS Cluster, 2003 - 2011**

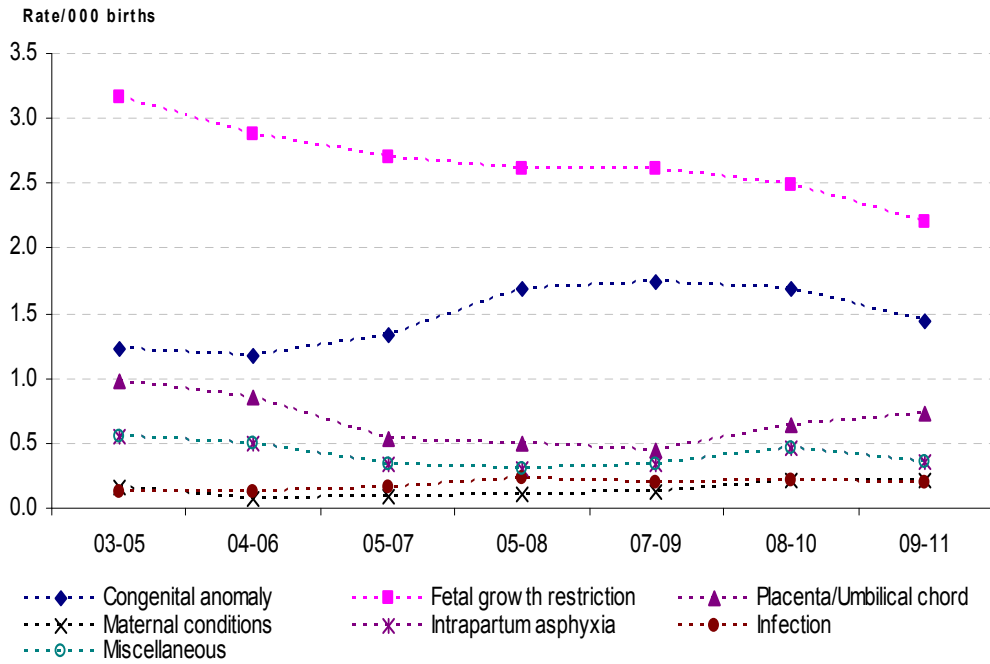


Fig 2: Continued drop in stillbirths associated with fetal growth restriction in 2011

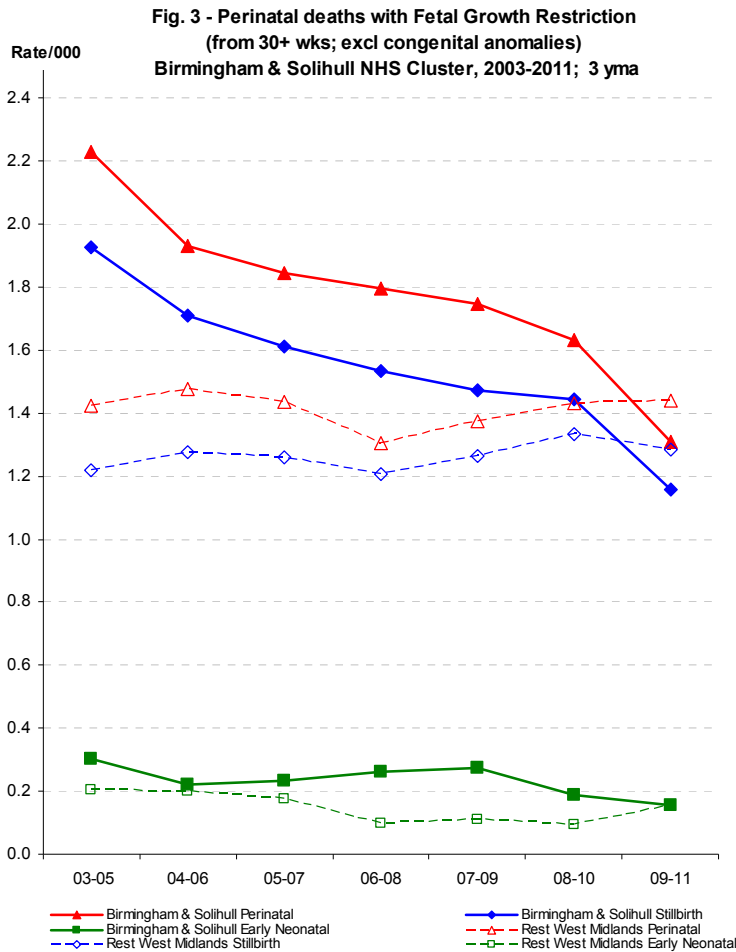


Fig 3: 3 year moving average trend shows a sharp drop in the 'most preventable' stillbirths in 2009-2011, resulting for the first time in Birmingham and Solihull rates being lower than the rest of the West Midlands

## Conclusion

IUGR is an important risk factor for perinatal mortality in normally formed babies. Confidential Enquiries of cases throughout the region, including those from the Birmingham Safeguarding Children's board, have shown that most normally formed perinatal deaths at relatively mature gestations are potentially avoidable.

Implementation of a coordinated programme including audit, training, ongoing monitoring, and the 2009-11 targeted Birmingham CoGS programme have led, in a relatively short time span, in

- significant improvement in antenatal detection of at risk babies, and a resultant
- significant reduction in preventable stillbirths associated with fetal growth restriction

These initiatives are easily extended throughout the NHS. They require a focussed programme of implementation and raising of awareness, but are sustainable without need for additional investment, and are in fact predicted to result in significant reduction in health service costs due to reduced perinatal morbidity and mortality [5].

## References

1. Kady S M, Gardosi J. Perinatal mortality and fetal growth restriction. In: Arulkumaran S, Gardosi J, eds. Best Practice & Research - Clinical Obstet Gynaecol: Elsevier; 2004: 397-410.
2. Confidential Enquiries on Stillbirths with Fetal Growth Restriction  
Perinatal Institute – 2007 [http://www.pi.nhs.uk/rpnm/CE\\_SB\\_Final.pdf](http://www.pi.nhs.uk/rpnm/CE_SB_Final.pdf)
3. Birmingham & Solihull Perinatal & Infant Mortality Report 2010. Perinatal Institute, 2012  
[www.pi.nhs.uk/pnm/birmingham2010/Birmingham\\_and\\_Solihull\\_Perinatal\\_and\\_Infant\\_Mortality\\_Report\\_2010.pdf](http://www.pi.nhs.uk/pnm/birmingham2010/Birmingham_and_Solihull_Perinatal_and_Infant_Mortality_Report_2010.pdf)
4. Birmingham Community Growth Scanning project - Interim Report – April 2011  
Perinatal Institute, 2011 [http://www.pi.nhs.uk/cogs/CoGS\\_report\\_-\\_Apr\\_2011.pdf](http://www.pi.nhs.uk/cogs/CoGS_report_-_Apr_2011.pdf)
5. QIPP: Reducing perinatal mortality and morbidity through improved antenatal detection of fetal growth restriction. Perinatal Institute, 2011 [http://www.pi.nhs.uk/cogs/IUGR\\_QIPP.pdf](http://www.pi.nhs.uk/cogs/IUGR_QIPP.pdf)